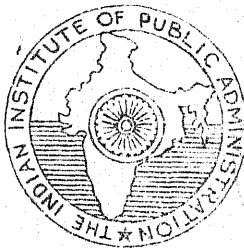


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INDIAN INSTITUTE OF PUBLIC ADMINISTRATION



ADMINISTRATION FOR INCREASED PRODUCTIVITY

IN

· AGRICULTURE AND INDUSTRY

*(Proceedings of the Regional Seminar held at Bangalore
from August 30 to September 1, 1966).*

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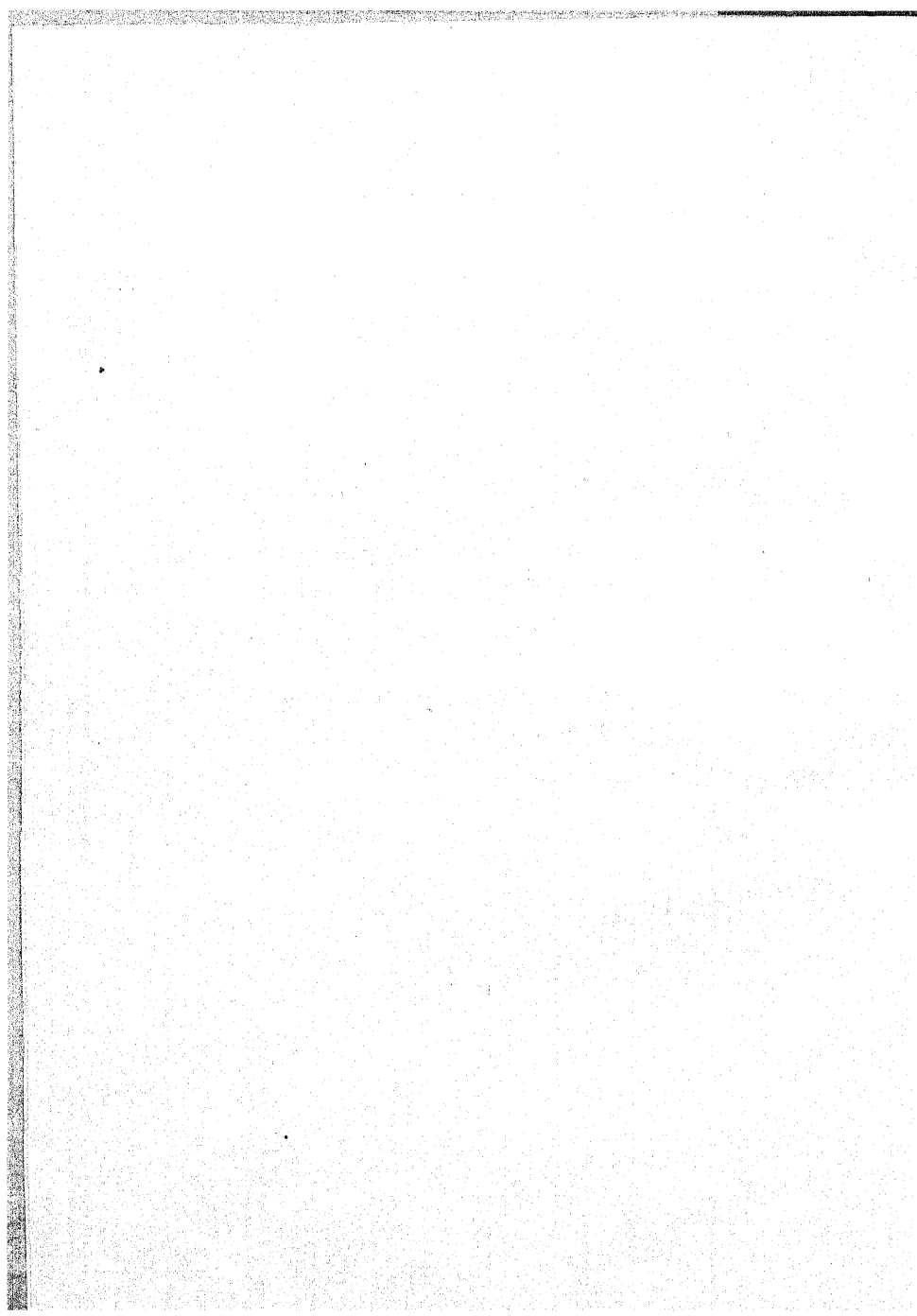
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PREFACE

From August 30 to September 1, 1966, the Mysore Regional Branch of the Indian Institute of Public Administration held at Bangalore a Regional Seminar on "Administration for increased Productivity in Industry and Agriculture". A seminar on a subject of this nature needs no justification. On the other hand, a Seminar on such a subject in the year 1966 was particularly significant for a variety of reasons. In the first place, in the context of the then prevailing national emergency the need for securing increased productivity in the two vital sectors of Agriculture and Industry was pressing. Secondly, it tied up well with the India Productivity Year which was observed throughout the country in 1966 under the Chairmanship of the Prime Minister. Thirdly, it was also the period which marked the end of the Third Five Year Plan and the commencement of the Fourth Five Year Plan.

The Seminar devoted considerable attention to the ways and means of securing increased productivity in Agriculture and Industry. In the pages that follow the proceedings of the Seminar have been briefly outlined. A summary of recommendations is also given. It is hoped that all those who are interested in the problems pertaining to agriculture and industry will find this digest useful.

Owing to unavoidable reasons, it was not possible to bring out this publication earlier. The delay is regretted. However, it is hoped that the delay in publication will not in any way take away the value of the recommendations made by the Seminar.

It is necessary to place on record our deep debt of gratitude to the Indian Institute of Public Administration, New

Delhi, the Regional Branch of Andhra Pradesh and the Local Branch of Trivandrum for their kind co-operation and active help in organising the Seminar. Our thanks are also due to Dr. K. Puttaswamaiah, M.A., Ph.D., who rendered valuable assistance in the preparation of this digest.

Bangalore,
July 3, 1968

K. NARAYANASWAMY,
Chairman.

PART I

PROCEEDINGS OF THE SEMINAR

PROCEEDINGS OF THE SEMINAR ON ADMINISTRATION FOR INCREASED PRODUCTIVITY IN AGRICULTURE AND INDUSTRY.

1. INTRODUCTION :

1.1. A Seminar on "Administration for Increased Productivity in Agriculture and Industry" hardly needs any justification, particularly at a time which marked the end of a Plan and the beginning of another, *viz.*, the end of the Third and the beginning of the Fourth Plan.

1.2. The First Five Year Plan, which has been rightly described as "basically a preparatory and stimulating plan", was in many ways a self-contained plan and the success it achieved in reaching its targets bred a claim of hope and confidence. This plan sought to rehabilitate the economy from the ravages of the war, famine, and partition and to formulate policies and build up institutions which would help economy to develop in the desired direction. The Second Plan sought to carry the process further, accelerate the rate of growth and initiate a strategy which would assist in bringing about such structural changes in the economy as seemed to be necessary if the long-term objectives of development were to be achieved. The Third Plan raised the sights and set the achievement of a "good life" for every citizen as the ultimate goal of socialist society that the country has already accepted. Although the idea of self reliance was implicit in the long-term growth models presented in the First and the Second Plan documents, it was explicitly stated for the first time, as a major goal in the Third Plan document. The Third Plan was conceived as the first stage of a decade or more of intensive development leading to a self-reliant and self-generating economy. The First Plan which was the victim of a series of criticisms

even to the extent of calling it "a paper plan with endless discussions", has had considerable success. The performance of the Second Plan was out also unsatisfactory. The record of the Third Plan, however, has not *prima facie*, been good. It should be noted, however, that in several respects the Third Plan period turned out to be very abnormal. Firstly, weather conditions were adverse during three out of five years of the Third Plan period. Secondly, the country had to face serious hostilities in the very second year and again in the Fifth year of the Plan. Thirdly, the delays in tying up the needed external credits in certain important cases in the earlier years and the virtual suspension of bulk of these credits during the last year accentuated the difficulties. The sharp step up of the defence outlay that the country was compelled to undertake, added to the pressure on resources. Further, the external aggression and severe drought in 1965 created problems which demanded urgent attention of the administrative machinery. Added to these, the administrative rules and procedures lacked the flexibility to meet the changing needs and necessary changes in them has not come about. All these factors contributed to the shortfalls in the Third Plan. It is clear, therefore, that if one tries to have the mental account about the success with which the plans are being implemented, the picture would not be so encouraging. It is, thus, a time when the country has to take stock of all the experiences at her disposal for the next plans. To plan out policies for the success of the future plans, proper guidelines to the planners are necessary from all concerned because planners are required to draw guidelines for action and they are to be guided by the administrators, engineers and such all concerned. It may be apt to say in this connection that "Planners are not crystal gazers; they are required to draw up guidelines for action. Forecasts are not predictions but a coherent framework within which to study the long-term implications of the present decisions. Projection methods must be adopted to the proposed objectives and the available means." At a time when the country's general contours are marked out by a series of plans and the formulators of plans need adequate

guidance from the experienced, a Seminar on "Increased Productivity in Agriculture and Industry" assumes added significance. In the following pages, an attempt has been made to outline briefly the deliberations of the Seminar.

2. OPENING OF THE SEMINAR* :

2.1. At the outset, the Chairman complimented the participants on the very lucid and interesting way in which they had presented their papers consisting of a mass of facts. He observed that among the participants everyone was an expert in one line or another, probably in more than one line. He observed that in an economy of a developing country like ours, plans are important means of achieving economic betterment. Plans in our country have been worked out with so much care and so much forethought that they are considered to be the best in the world. The Chairman complimented the Indian Planners for having given the country such plans. But, what has happened is that there had been basic difficulties in the process of their implementation with the result the plans have fallen far short of their expectations. The reasons for such failure in achieving the targets and the difficulties in the implementation of plans have to be detected. He quoted two instances in this regard. One of the instances related to agricultural productivity and production and supply of fertilisers and affording credit facilities to the needed extent. In the State of Andhra, as elsewhere, the distribution of fertilisers and loans, however inadequate, have been entrusted to co-operative societies. It is a well known fact, how many of the co-operative institutions are functioning on the right lines and how much quantity of fertilisers is coming through the co-operative institutions and how much is being misused. As a result of these, very little is reaching the ryots. Therefore, there is need for rethinking on the distribution of fertilisers for the success of the schemes relating to agricultural production. A question arises as to whether there should

*Please also see Appendix No. 2.

not be more responsible and efficient agency for the distribution of fertilisers than the co-operative institutions obtaining at present. To take another instance, proper supply of agricultural implements is a major factor in agricultural development and productivity. The same plight is being noticed in the supply and distribution of the agricultural implements. These two instances are, in fact, the major factors impeding the progress of agriculture to a large extent. It is clear, therefore, that the plans have been formulated on the right lines and the success has not been achieved due to the bottlenecks which have emerged during the implementation of the plans. In fact, the type of bottlenecks indicated above could be quoted in any number. It is hardly necessary to stress that timely and proper supply of the basic necessities like those quoted above will contribute to the progress of the development envisaged in the plans. The Chairman requested in this context the participants to apply their minds to the problem of removing the bottlenecks that are inherent in the economy and which are acting as obstacles to the successful implementation of the plans.

3. THE NEED FOR PROPER PLANNING AT ALL LEVELS :

3.1. At the outset, before discussing the need for proper planning the process of which should be sophisticated at the national and state levels and specific at the lower levels, it is in fact necessary to know as to what we mean by a plan. Planning has become the slogan of our time, the talk of the day and the need of the hour. The growing emphasis on economic security and material welfare has made planning a *sine qua non* of the modern economic organisation. Indeed, as Prof. Robbins, one of the famous economists put it, "planning is a great panacea of our age." However, the concept of planning is not something entirely new to our times. It has been made use of in greater or smaller measure throughout the ages. No human activity can be considered to be completely planless. For a certain amount of forethought and collection is involved in every action. On the other hand, we quite hardly conceive of a stage where

everything is fully planned. Planning is, therefore, a matter of degree. Consciously or unconsciously we get involved in some kind of planning or the other. The choice, therefore, strictly speaking is not between a *plan* and *no plan*; it is between the various kinds of plan; there should be planning at the national level, state level and even lower levels. While planning in all these levels, one has to act with purpose. To quote Prof. Robbins again, "To plan is to act with purpose, to choose; and the choice is the essence of economic activity." Planning is thus an activity directed towards the conscious and deliberate choice of economic priorities by some public authority.

4. PERIODICITY IN PLANS :

4.1. We talk of plans of development and these plans imply a certain periodicity. Sound planning would include plans of different duration drawn up for different, yet inter-related purposes. Broadly, there are three kinds of activities we are concerned with. The first is agricultural production. This should include a great number of schemes that mature quickly. They should be capable of yielding output in as short a period as possible, say two years, for the investments made. The cycle here is too short. Good planning should include a quick rhythm of investment increment and output improvement.

4.2. Secondly, projects and schemes connected with the activities in industries, modern transport and power and irrigation take longer periods to show a return. Five to seven years are needed for completing the construction of specific projects. The cycle of maturation determines the periodicity of the medium-term plans. As development plans include schemes, programmes and projects of both times, the plan is covered between five to seven years. Within a medium-term plan, it is necessary to strike a proper balance between short-term or quickly-maturing schemes and programmes with a longer gestation period.

4.3. Finally, where a backward country has to be pulled into the full focus of development, longer-term plan is needed. Various forces inducing growth identify themselves and discover their roles only in the chronological-cum-logical pattern of a perspective plan covering a period of 15 to 20 years. The carrying through of structural changes, where old relationship yield place to new ones, takes considerable time. These plans of different duration are not unrelated, they have to be wrought together. Only then one can expect to achieve the dimensions, proportions and the step-by-step results desired.

4.4. In our country the magic phrase 'Five Year Plan' has attuned to over-emphasise the medium-term aspect of planning and grossly under-rate the short-term plans and efforts implicit in them. Likewise, the perspective plan is given a somewhat casual recognition. Its thrust towards structural transformation, its unfolding of the logic, that is, the essence and implications of fundamentally altering the occupational and production structure of the economy, fail to get the needed attention. Looking just at the medium-term planning there is the tendency to consider investment meant to build or expand production capacity, while neglecting complementary and accessory investments.

4.5. The latter investment primarily raises productivity, not production capacity. Perspective planning can provide meaning and rationale to the production of equipment, often not up to date and yet costly, as a stage to be gone through before reaching sophistication in fabrication. To learn to produce, to design and construct new equipment is to enter the *sanctum sanctorum* of industrialisation, and that requires a preliminary stage of amaturish apprenticeship.

4.6. Unless one grasps the full import of the arch that is to span undevelopedness with development, the thrill of engineering it, which is among the great rewards and enriching elements of growth, is likely to be missed. Without that, planning ceases to be an adventure in achievement and becomes an irksome task.

4.7. The fetters of growth do not fall off ; the bottle-necks do not break, except through a considerable period of effort. A perspective plan indicates how the unavoidable detriment that growth causes to balance gets corrected, or how the sharp increase in the rate of investment and saving demanded by the intensive phase of growth, later tends to flatten out ; or how qualitative improvements follow in the wake of quantitative achievements. Planning viewed in smaller segments is apt to seem intractable, even frustrating. The longer-term envisioning of growth does not mean that the immediate tasks can be neglected. They are vital and crucial. What is being pleaded for is that planning has to have the same discipline that, according to Vincent Smith, the builders of Tajmahal evinced: 'to conceive as giants but finish every bit as jewellers. It is clear, therefore, that the planning should be done in such a way that it consists of projects and schemes of all dimensions and durations which are determined by the economic climate of the nation.

5. REGIONAL PLANNING :

5.1. 'Regional Planning' refers to a consistent plan for a nation sub-divided into regions. When we say a 'Regional Plan', we look at the geographical sub-divisions of the plans that we make, of the investments more particularly, and the income increases that we want to achieve with the aid of these investments. Investment here refers not only to material things but also to human beings (investment in education, etc.). Sub-division of a country in which geographical parts may even be of a higher order may be attempted. We may first of all sub-divide the country into States and then sub-divisions are attempted at lower levels, *e.g.*, districts and even cities and villages. With such a planning, one can have optimal dispersion of economic activities over various types. This is a difficult job. If one has to plan not only according to sectors or branches of activities but at the same time according to geographical sub-divisions, such planning would be of two dimensional type. In aiming at such a plan the element of space and

time and the element of transport cost have to be kept in mind. It is clear, therefore, when we attempt at the preparation of a plan which is essentially of two dimensional character, *viz.*, plan according to sectors or branches of activities and according to geographical sub-division, one has to have a thorough grasp of the geographical set-up of the country together with its economic potentialities and the resources at the disposal of the nation. Definite strategies are required in planning for full effort of this kind. These strategies will have to be crystallised by experience and persistent action. Three plans have come to an end in the country. Strategies have differed from plan to plan. We are at the mid-point where considerable experience has been gathered over three plans and we are to work out a critical part of the strategy. It may be of interest to quote in this context that "it is a school of experience which improves and matures ideas about the dimensions, dynamics and inter-dependence of factors of growth, of the possibilities of choice between growth variants, of a lack of consistency, or even of contradiction, in the decisions reached, and of the time required to accomplish the process that has been set in motion."¹ It is clear, therefore, that the inauguration of the Fourth Plan is a moment of scrutiny and it is a stage all the more necessary because we have reached a decisive stage in the growth strategy, where a marked increase in investment, and, consequently, in the accumulation rate is indicated.

5.2. Sound planning would include plans of different duration drawn up for different yet interrelated purposes. Good planning should include a quick rhythm of investment increment and output improvement. It should contain a large number of schemes which would be capable of yielding quick returns in as short a period as possible. Yet the importance of medium-term plans cannot be denied. Projects and schemes connected with the activities, *e.g.*, modern transport, irrigation and power would take six to seven years

1. Ashok Mehta, *The Plan : Perspective and Problems*, 1966, p. 57.

for yielding returns. Finally when a backward country has to be compelled into the full focus of development, the longerterm plans are needed. Therefore, the planning should be in all the three stages; short-term, medium-term and long-term. In addition to these, the planning should be on a regional basis. Further, the plans should be formulated on a two dimensional approach, *viz.*, on regional basis and sector-wise basis and these should be at all levels. All this means that the process of planning should be sophisticated at the national and State levels and specific at the lower levels.

6. THE RATIONALE OF TARGETRY IN PLANNING

6.1. The art of fixing the targets is one of the fundamental aspects of planning. The targets are set at times deliberately high particularly with the knowledge that they cannot be achieved. This is poor planning. There is no meaning in saying that we must set out targets very high so that a shortfall will be of no consequence. The targets in our national plans are not considered very high but the performance has been very poor.

6.2. At the outset, there is need to know as to what is meant by 'targets'. Targets can and do refer to several things. Investment and output in different sectors, aggregate income, personal disposable income, taxation, export level, imports of steel and such other commodities, indeed a large number of items can be the object of target-setting. But targets are to be distinguished from pure 'estimates'. This distinction is of some importance and can be illustrated in terms of the figures of investment and output in different sectors that every plan document contains. These figures represent a generous mixture of both 'targets' and 'estimates'. For instance, a good part of the private sector investment and output figures do *not* amount to anything but an estimate by the authorities of what may be expected in these areas (within the framework of certain general policies. Thus, some agricultural investment (*e.g.*, bunding), small-scale industry

and services outputs are typical examples of such estimates. These contrast with the rest of the private sector and all of the public sector investments and outputs which constitute the targets in strict sense. The expansion of steel capacity, for instance, by so many million tons is a definite target, which the Government *aims* to achieve by explicit action.

6.3. A further point needs to be noted concerning these targets. Many of these targets are *not* firm in detail. Take, for instance, the example of private sector investment target in the organised industry sector. A careful reader of the plans will find that not all of these targets are broken down into firm targets of investment in individual industries; a fraction, varying from 15 to 25 per cent is 'free' and its composition is *ad hoc*. The general impression of the economy being entirely or overwhelmingly subjected to targetry, in the valid sense of the term, is therefore incorrect.

6.4. By the same token, therefore, it may be more correct to criticise the planners for making wrong estimates rather than for setting but not implementing the targets. However, it would be worthwhile to bear in mind that any kind of miscalculation of an estimate may itself lead to the non-fulfilment of a target. Thus, for instance, the over-estimating of private investment could seriously affect the agricultural output, thereby affecting at least two important targets, viz., increased availability of foodgrains and rise in the level of national income.

6.5. That leads us to the next question: Is there any way in which we can say that some targets are *more important* than others? Can we, for example, afford to ignore the non-fulfilment of some and not of others? Clearly, targets embodying national objectives are very important. Among these can be counted: national income, level of employment, consumption and distribution of income, level of agricultural and industrial productivity,

etc. With these must be reckoned the objectives of raising the level of savings, improving the capital and ensuring the steady investment in capital goods all of which buttress the grand, forward-looking of targets of an increased rate of investment and growth (employment creation and elimination of general poverty) in the stipulated time of 25 years (or so) perspective spanned by the entire planning process. It need hardly be emphasised that all other targets such as industrial targets of investment, are only subsidiary to and instrumental in the fulfilment of these objective-targets. This also means that it is of little significance whether of stipulated target of aluminium falls short of some tons. These shortfalls are of importance whether they occur within the broad sector like industry and services or between them, except in so far as they impinge upon the objective-targets. The analyst of the unfolding situation, therefore, has to examine whether this is so, before throwing up his hands at non-fulfilment of the detailed targets.

6.6. This analysis of the art and science of targetary prompts two further observations of some interest : (1) Do we need to fulfil rigidly as many targets as we currently aim at for ensuring efficient planning ? Detail targets require balancing of inputs and outputs which demand expertise, information and simultaneous solution which are nearly impossible to obtain. The targets are inevitably 'shallow' when formulated. Surely, they need revision as information trickles in, as experience reveals 'optimum' or miscalculation and underlines the foolishness of assuming perfect foresight. Targets, therefore, must inevitably be flexible in character. This flexibility in the face of imperfect foresight is the *essence* of good planning and it is wrong to judge non-fulfilment of pre-set targets as necessarily a failure. (2) This, however, raises a further question as to whether the Government *has an appropriate machinery* for dealing with this element of uncertainty. For instance, if aid inflow in the plan period turns out to be lower than estimated, the Planning Commission has an alternative programme to which it can switch over. Or, say,

agricultural output raises by less than the target ; would the Planning Commission know how best to adjust to this ? The Third Plan document indicates an ambivalence towards this type of preparedness. The detailed targets were apparently worked out for a higher agricultural output target. However, a mere pessimistic outlook on agriculture appears to have led the planners to spend five to six per cent instead of resorting to a clear formulation of what would be done under the different alternatives. This is clearly an area where improvement in planning is required.

6.7. The target exercises are vital in planning. In the last few years, two valuable lessons have been learnt (though not always effectively implemented) the value of a *perspective* plan and the importance of a phased Five Year Plan are no longer in dispute. While this time dimension to target-setting and implementation has been understood, the space-dimension has been missed so far. Let us try to illustrate this again with industrial targets. Almost always, the targets exist on a 'national' level. The regional distribution of investment and output targets do not exist. Leaving the allocation of individual to different entrepreneurs and/or by regions licensing throughout the plan period to the executive Ministry of Commerce and Industry leads to a series of consequential decisions where each State competes for allocation, resulting in the break-up of most targets, between States that inevitably small, uneconomic plants and little regard for overall economy. There is thus need to avoid this aspect of irrationality in targetry.

6.8. It is clear from the above analysis that the targets under the plans are set out based on certain financial patterns and the availability of inputs. At the time of setting up of these targets, assumptions of availability of finance and inputs are made and based on those assumptions the targets are fixed. Experience has shown that during the last Third Plan period, very often, there has been a change in the plan outlay, sector-wise outlay and also the availability of inputs. In view of this, achievements fall

short of the plan targets. While fixing the targets, there should be proper appreciation of the resources available and the capacity to achieve them. The targets should not be too high or too low. There should be rationality in the fixation of targets.

7. INPUTS NEEDED FOR AGRICULTURAL DEVELOPMENT :

7.1. Two characteristics, one of permanent nature and the other of immediate nature were discussed in the course of the Seminar. This was in the context of increasing production in agriculture under the successive plans. As regards the former, the emphasis should be on irrigation and soil conservation which lead to constant increase in production. As for the later, the stress should be on matters like timely supply of and in sufficient quantities of seeds and fertilisers. Plant protection is also an equally important factor. The policies relating to these permanent and temporary factors which are vital in increasing the agricultural production were discussed in great detail. Definite policies are necessary for successful implementation of the schemes relating to the supply of immediate necessities in the form of agricultural inputs. It was stressed that an efficient agency capable of supplying adequate quantity of fertilisers and other inputs is necessary. It was pointed out that large quantities of fertilisers are required time and again to meet the growing needs in this respect. This matter is really one which has to be decided at the highest level. The Government of India have got to take this seriously into consideration. The inadequate supply of fertilisers will affect the growth of agriculture. In the following paragraphs an attempt has been made to record the discussions in respect of each one of the agricultural inputs.

8. FERTILISERS :

8.1. Given the land and water, unless we supply the required nutrients, plants cannot grow and give the best yield. Fertiliser is, therefore, one of the most important requisites for increasing agricultural production. The use of fertilisers has to be appropriate. It should be of the type

and quantity required which should be based on the nature of the soil which can be determined by means of soil testing. Therefore, the question is not merely the application of fertiliser but also whether it is of the right kind, whether it is being applied in right quantities, at the right time and at the right place to ensure maximum yield profit. While emphasising the need for soil testing in the context of application of fertilisers, it may be of interest to note that "the use of fertiliser without first testing the soil is like taking medicine without first consulting the physician to find out what is needed".¹

8.2. It has been the experience everywhere that sufficient quantities of fertilizers in places and at times of need have not been supplied with the result the tempo of agricultural production has been far short of expectations. In this connection, a suggestion was made that the fertilizer production should also be entrusted to the private sector and should not be a monopoly of the public sector. It was also suggested that fertilizers may be obtained on loan basis from other countries till such time as we are able to produce fertilizers in sufficient quantities.

9. AGRICULTURAL IMPLEMENTS :

9.1. It is often said that there has been insufficiency in the supply of agricultural implements. It is in this field that the small-scale industries are doing a lot of service in the matter of increasing the supply of agricultural implements but they have not been able to meet the entire demand. To bring sufficiency in this respect we have to evolve certain standard implements region-wise and if necessary, product-wise so that they could be produced on a mass scale in the areas. A suggestion was made that the research stations in the Agricultural Department or the University of Agricultural Sciences must evolve some sort of standard implements and they must be passed on to the

1. Gilbert R. Muhr, M. P. Dutta and others, soil testing in India, United States Agency for International Dev. Mission to India, New Delhi, 1965, P. 31.

organised industry for the manufacture on a mass scale. If this is done the problem could be solved to a considerable extent. If an uniform standard is introduced in the production of implements and machineries needed in the context of agricultural production, it would help servicing, repairs, and replacements of implements. It is quite necessary to give adequate attention to the manufacture of spare parts so as to ensure maximum use of the available machines and tools.

10. PLANT PROTECTION MEASURES :

10.1. Plant protection is very closely linked with the application of fertilisers. When plants grow well, there is greater scope for multiplication of insects and pests. Historically, it is well known that human race settled in areas where there were facilities for healthy living. The same is also true of the insects' world. When crops grow luxuriously, the pests and insects multiply and we have to take measures to combat them. Therefore, plant protection measures go hand in hand with the increased use of fertilisers. It is observed that the requirements of fertilizers are much more than what is really available. So adequate measures to achieve sufficiency in respect of pesticides and plant protection equipments to combat the pests and diseases of plants are necessary. During the discussion about the plant protection measures, it was felt that 99 per cent of the cultivators are conscious of the importance of plant protection measures but if even one man neglects to take such measures, the efforts in the entire area may become abortive. Hence if we want plant protection to be completely successful, we must see that the entire area is covered prophylactically and curatively. So, in order to ensure such complete success it may become indispensable to compel cent per cent farmers to take up plant protection measures by having recourse to the promulgation of a legislative enactment in this regard. It was, therefore, recommended that pest Act should be brought into force to compel the owners of the land in certain tracts to adopt

pesticidal measures necessary to ensure the protection of the crops since the failure of even one land owner might nullify the benefits that are likely to be derived from the employment of such measures by other ryots in the tracts. The provisions of the Act must be adequate to ensure effective protection on the one hand and prevent harassment to the ryots on the other.

10.2. In this context, it was recognised that there should also be an organisation for quality control of pesticides throughout the line of supply down to the ryots.

11. USE OF POWER TILLERS AND TRAINING OF BLACKSMITHS, VILLAGE CARPENTERS, ETC. :

11.1. Another basic factor which came up for discussion was the provision for improved power-tillers and the improvements in the technological skill of village craftsmen and village carpenters. Unless the improved power-tillers which can replace four bullocks or two bullocks, are provided agricultural production just cannot go on in an improved way. Unless the technological skill of village craftsmen and village carpenters are improved, new tools cannot reach the villagers. Considerable improvements have been made to provide skilled craftsmen in the factories by recourse to several types of institutional and practical training. There are a large number of Industrial Training Institutes spread over in almost all the parts of the country where candidates are being trained in different trades like fitters, turners and so on. But, no attention is being paid to improve the techniques of the village blacksmiths and village carpenters. The need for training of blacksmiths and carpenters in the workshop wings of the different training Institutions in the country like I.T.I's and G.T.C's was, therefore, emphasised. It is blacksmiths and carpenters who could provide the agriculturists the necessary implements at the village level.

11.2. It, was, therefore, recommended that necessary training should be imparted to the village carpenters and

blacksmiths who repair the improved implements. It is also necessary to impart training to agriculturists who take to mechanisation for undertaking the maintenance and repairs. It is also necessary to train suitable personnel who will move about in the villages periodically for undertaking the repairs of agricultural implements.

12. RECLAIMABLE LANDS :

12.1. It is estimated that 30 per cent of the land in the country is reclaimable ; but it is not under the plough. It is sheer waste of national resource. Therefore, it was suggested that when there are large blocks of lands which cannot be reclaimed without heavy expenditure and when there are no persons or agencies coming forward, Joint Stock Companies may be invited to take up reclamation of cultivable lands and cultivate the lands. By way of incentive to such companies the amount spent by them on reclamation should be exempted from income taxation. There should be no ceiling limit on the expenditure of land reclaimed and cultivated by Joint Stock Companies.

13. AGRICULTURE HOLDINGS :

13.1. Sub-division and fragmentation of holdings have been factors inhibiting the growth of agriculture. Therefore, consolidation of holdings has become an important item to be covered in the agricultural field. This aspect is more vital than even land tenancy and the tenancy legislation. Land is divided into such small bits that after some time, the holding may be reduced to a small belt just enough to hold a tree. It has, therefore, become a problem for the farmers even to cultivate their lands properly. So, the success of the schemes relating to increasing agricultural productivity also depends upon the existence of provisions to do away with such small holdings. It was, therefore, recommended that land reforms should be speedily implemented and special attention should be paid to the prevention of fragmentation of holdings below a certain economic unit.

14. CONSERVATIVE ELEMENTS IN FARMING :

14.1. In spite of the rapid advances in introducing new techniques in the agricultural field the traditional and age-old conservative methods are still prevalent in many parts of the country. Measures to break-through the traditional and age-old conservative methods that our farmers are engaged in present day farming should be explored.

15. CROP PLANNING :

15.1. Success in increasing agricultural production depends on proper crop planning in as much as it depends on adequate supply of the required inputs. The crop planning should be based on the soil conditions of the area and the availability of water and such other natural facilities. Therefore, there is need for a systematic crop planning in every part of the country.

16. ADMINISTRATIVE MACHINERY :

16.1. Though the farmer is given the necessary input and the credit, the proper advice regarding the ways in which the inputs are to be utilised is necessary. On the administrative side, the workers at all levels should toil with the farmer and advice him every day. Unless the man in the agricultural administration feels that his job is an important one and unless his work is recognised as important and translated into some sort of material advantage, this part of the input for agricultural productivity remain ineffective.

17. AGRO-PROCESSING INDUSTRIES :

17.1. Agricultural development should be linked with agro-processing industries. Agro-processing industries are not, unfortunately, related to the types of credits or the types of crops which are produced there. Poultry marketing societies which process poultry foods and eggs and market them stimulate poultry farmers and the farmers

are realising good return of money. Some thing like this can be applied to the agro-processing industries. The policy regarding agro-processing industries has to take this into consideration. To give a simple example, by linking up tomato cultivation to fruit canning factories, farmers can be encouraged to grow more and realise good monetary benefits while the factories can be assured of the required raw-material. These factories can enter into working relationship with the farmer in supplying their inputs and credit requirements in return to their produce. It should not, however, act as an alternative to the co-operatives but it should be in addition to co-operatives.

18. STARTING OF AGRO-INDUSTRIAL CORPORATION :

18.1. This idea was mooted some time back and was subsequently dropped. It is necessary to revive the same and start an Agro-Industrial Corporation which should be on an All India basis and should be made applicable to all the States. This is with a view to taking care of the manufacture of implements, production of fertilisers, etc.

19. NEED FOR BETTER COMPOSTING :

19.1. Even in well advanced countries, use of fertilisers and application of organic manure has been recognised as a basic need of the soils. While, in countries blessed with a temperate climate, it may not be necessary to replenish the organic fertility of the soil frequently, it is quite essential to do so in the tropical areas like India where the hot climate leads to depletion of the nutrition contents of the land. While farmers are not ignorant of this fundamental need of the soil, the difficulty in getting adequate quantities of organic manure to apply for all the cultivated lands stands in the way of liberal use of this basic nutrient. One of the reasons for the inefficiency in this field is presumably the greater reliance on sources of manure on animal refuse like cow-dung and of other domestic animals. It is possible to increase the quantity

of natural manure sizably if more attention is paid to composting all vegetable refuse available in farm steads and house-holds.

19.2. More than the quantity of raw-material available for composting, the method of processing determines the quality. Lignite materials like saw-dust fibres, ground-nut hull or paddy husk, are difficult to decompose and hence delay the proper manuring of the compost when they mixed in the initial heaps. For rapid results, these should be removed, burnt and added as ash for composting.

19.3. Vegetable wastes such as straw, chaffs, damaged hey, hedge-trimmings, weeds (preferably before seeds-setting stage), grasses, crop residues, fodder left over after feeding livestock, fallen leaves and spent flowers are ideal materials for composting. Whatever available animal refuse like blood, horns, hoofs and bones (in a final pulverised condition) baiting of lives-stock, urban refuse like garbage, waste paper, rags, night soil can be used to prepare compost.

19.4. For easy decomposition of bulk organic matter it is necessary to set in motion biological reactions by adding suitable activators. These agents stimulating decomposition, also known as starters, have to be richer in nitrogen than the bulk matter. Night-soil, cow-dung and cattle urine have been found to serve this purpose effectively.

19.5. While emphasising, the need for increasing fertiliser production in the country, a question was raised as to why night-soil, compost human resources, etc., as described above should not be utilised. In this context, it is advised that when sludges like night-soil or cow-dung are employed as activators, they should be used in the form of thin decoction and mixed with the refuse so that every portion of the plant or animal residue gets inoculated with the bacteria. Often limps of half dried cow-dung are mixed

with bleek materials like vegetable refuse. In such cases loss of nitrogen from the dung is more and ripening of the compost is also delayed, the ultimate product often proves less effective as a manure.

19.6. Human and cattle urine can also be used as an activator after being absorbed in suitable litters. Starter can be mixed with the refuse heap at the rate of one part to six by weight of the bulk matter. The starter should be well scattered over the charge with a fork and worked in by burning over the material. It is necessary to cover the heap with soil so that the nutrient gases may not escape.

19.7. For better utilising of the composts as described above, it was pointed out that they should be specific plans to take maximum advantage of the available night-soil in towns. But, at the same time we should not take away the need for increasing fertiliser production because all our consumption of fertilisers when compared to other advanced countries is meagre. It was pointed out in this connection that the utilisation of the night-soil should be as a by-product only because the fact we are going to produce more by using night-soil, etc., is not at all a practical proposition. Even if we increase production of night-soil compost of all those things by 100 per cent, still our production is not going to be what we want it to be. Therefore, to lay much stress on it and to get bogged down is not going to solve the problem. Therefore, we should develop this as a by-product. But the utility of the night-soil which has been emphasised earlier cannot be ignored and there is need to have specific plans to take maximum advantage of the available night-soil in towns.

19.8. In the light of the above discussion, it was recommended that local manurial resources such as night-soil, cow-dung, green manure should be fully utilised. Adequate encouragement should be given to municipalities and other local bodies such as Panchayats in the initial

stages to develop these manurial resources. Night-soil and green manure should be supplemented by liberal use of fertilisers.

20. IRRIGATION PROJECTS :

20.1. The problem of slow utilisation of irrigation potential created under the major irrigation projects has become a topic of the day and is attracting the attention of the administrators and other concerned for some time past. It is an accepted factor that many ambitious irrigation projects are completed according to the schedule of time prescribed for such completion. But it is also a fact that not all the water that the projects have made available is fully utilised by our farmers. Some times, only half of the stored water is used. Non-utilisation of water is not a particular phenomenon of one dam or other but it is a general phenomenon all over the country. At best it may differ in degrees. The extent of non-utilisation of the irrigation potential created and, therefore, of the non-utilisation of the water available is a subject which needs to be analysed carefully by everyone concerned with the economic development of the country.

20.2. During the implementation of several schemes in the successive Five Year Plans, a lamentable position relating to the non-utilisation of the available water resources and the non-utilisation of the irrigation potential created through the number of irrigation projects is being noticed. One of the drawbacks which is noticeable relates to the delay in the completion of the irrigation projects. In some other instances even after lapse of decade and more the waters under the dams have not been utilised. In the State of Andhra, the Nagarjunasagar Project has not seen the completion of the first stage. If only this irrigation project had been completed as per schedule, it would have created an occasion for increasing agricultural production and the locking up of the capital utilised so far for building the project could have been avoided. In the State of Mysore

the picture presented by one of the biggest irrigation projects viz., Tunga Bhadra Project is quite different. Though this Project was completed 14 years ago, the non-utilisation of potential created has remained a big problem. For this paradoxical situation of the existence of water in the Dam on the one hand and of the non-utilisation of it by the farmers on the other, there have been several causes. The high level Canal has so far not been completed. Availability of sufficient water is an important factor in growing crops. It is especially so in the arid and semi-arid regions. In many villages under the T. B. ayacut, a general complaint is heard that there are either no field channels to serve the particular area or that there is not enough water supply due to various reasons including breaches in the distributaries and sub-distributaries and consequently starving of the field channels. In this context, it is relevant to say that the first lesson the irrigation experts learnt from the Bhakra Dam was that the Canal system should be completed before the main dam. In the context of the T. B. Dam, it is pertinent to say that though 14 years have elapsed since the date the water was first let out in canals, the distributary system has not been completed even to this day. It is something like creating ample food in an area where there are not enough men to eat. We may, however, note that "the extension of irrigation benefits from the Hirakud and the T. B. has to be postponed because the canals were not ready in time"¹. If the canals are dug before the completion of the dam, there would be an occasion to the ryots to level their fields and to dig the water course so that they may not be found unprepared when waters are released in the canals in full capacity. It is clear, therefore, that the main reason for the lack of utilisation relates to the delay in the completion of the different types of channels for the flow of water for the fields starting from the high level canal upto the field and the feeder channels. There is no co-ordination in the construction of the aspects as such and the feeder channel on the other. If on the other hand the channels are completed along

1. Yojana, December 14, 1958, P. 7.

with the project, the water could have been used on the fields straightaway. It is this draw-back *viz.* delay in the completion of the Dam that hinders the utilisation of the water. It is clear, therefore, that a scientific plan is necessary to exploit the water resources of the State and the country large ; and the plan should be put into operation as per the schedule prescribed.

20.3. On the basis of the above discussion, it was recommended that the major irrigation projects should be planned in such a manner that there will be absolute co-ordination in the construction aspect and the different items of construction under the project like the construction of major Dam and the field channels etc. It is also necessary to see that the construction in all respects is completed simultaneously.

21. NEED FOR SOIL SURVEY STATIONS AND SOIL TESTING :

21.1. With the increasing awareness of the problems connected with the use of fertilisers, it has also become absolutely necessary to guide the farmers in the proper use of fertilizers through prescription of optimum doses necessary for soils in different regions. Soil testing laboratories have been set up in various States to test soils and assess their nutrition status and their needs. Based on the findings in these centres, soils are classified according to the nutrient content, which is available to the crops in four groups. Manures are prescribed to suit these soil types classed as high fertile soils and those with medium, low and very low fertility levels. In order to make the prescriptions more precise and practical, the Madras Government sanctioned a scheme for co-relating the soil tests in the laboratories with crop responses to the recommended fertiliser doses under field conditions. The State's scheme was implemented upto the end of March 1967 and thereafter an all India co-ordinated scheme for the same purpose has been launched.

21.2. The soil tests also bring to light other defects of the soil such as salinity and alkalinity which have to be rectified by adopting special methods. These methods are

often costly and beyond the reach of poorer farmers. In order to popularise such schemes of reclaiming the soil, a subsidy scheme has been sanctioned by the Madras Government for supply like gypsum needed in such cases.

21.3. Efforts made by the Madras Government in this sphere is commendable. Though a beginning has been made in other Southern States and soil Survey Stations established, there is need for establishing more Soil Survey Stations in all parts of the country. Soil Survey Stations and soil survey teams should be set up to advise the ryots about the proper time and quantity of fertilisers for their lands with reference to the crops.

22. UTILISATION OF GROUND WATER :

22.1. Water is a precious commodity over a great portion of the country. Surface water has been used to the maximum by building innumerable tanks but the enormous losses through evaporation sets a limit to surface water storage and development. The population in the semi-arid regions, therefore, have to look to ground water for their domestic and agricultural needs. The systematic study of ground water conditions with a view to evolving a good management of ground water resources is, therefore, a matter which has been repeatedly emphasised in the plans. The development of vast areas in the country for the industrial and agricultural purposes would primarily depend on the systematic exploitation of ground water.

22.2. While intensive efforts are made in the Southern States to harness and utilise the irrigation potential through major, and medium projects, development and use of underground resources of water through tube wells is yet to be attempted on a large scale. The coastal track of Andhra Pradesh are blessed with Nature's bounties in plenty. Nearly 60 per cent of the rice and sugarcane produced in the State is accounted for by the coastal districts. The major irrigation systems of the rivers Godavari, Krishna and Pennar

covers nearly 25 lakh acres in these areas. But barely 51,000 acres are irrigated by tube wells. There is thus plenty of scope for further exploitation.

22.3. The numerous streams, rivers, irrigation and drainage that ramify the coastal districts of West Godavary, East Godavary, Krishna and Guntur serve as continual source for accumulation of ground water. It is estimated that nearly $\frac{1}{4}$ th of heavily irrigated area (paddy) can be doubled by tapping and utilising the hidden treasure *viz.*, ground water.

22.4. Upland areas in these Districts have also been benefited by the well irrigation. The higher cost of tube well water for irrigation, had not bettered the conditions of the farmers in Gonnavaram, Tannali, Ponnur, Kovur, Bhimadole, Peddapuram and Tallrevu, in these coastal districts from utilising these sources to great advantage.

22.5. In Madras, tube well irrigation has been fairly wide-spread in the northern districts of Chingalpet and South Arcot. The available potential is said to be for more than what has been actually used.

22.6. Comprehensive programme to supplement river irrigation in Kaveri and Tambarapani deltas with an organised exploitation of ground water and to build up irrigation grid to protect farmers from seasonal vagaries are under way in Madras with the technical aid from the U.N. experts. Mysore and Kerala have, however, not been so forward in this regard. In Mysore, emphasis is laid mainly on open wells and schemes have been now under formulation in the light of the ground water survey conducted by the Department of Mines and Geology in 1966. Possibilities of exploiting ground water through large scale bore-wells have also to be explored.

22.7. In Kerala, irrigation from rivers is a mainstay notwithstanding the difficulties in irrigating lands in highly uneven terrain prevailing in the State. Efforts are concentrated on harnessing the rivers and rivulets. In

addition, lifting water from numerous streams with pump-sets has also been encouraged. Shallow wells are made in the holdings and used for irrigating garden crops. Of late, filter points are sunk in many regions particularly in the areas chosen for intensive cultivation. But a regular bore-well system is rarely used for irrigating crops in Kerala. The rough and highly absorbent soils in the State are available for accumulation of ground water in considerable amount. A comprehensive survey of the possible resources of underground water is a vital need. It is understood that this is under the consideration of the Government of India.

22.8. It is clear from the above discussion that in these days of food scarcities and lack of adequate supply of water for crops in the semiarid areas, the need for exploitation of the ground water is evident. A regular systematic survey of the areas with potential hidden water will have to be made. Incidentally, if exploitation of ground water is taken up, people get jobs right in the villages because these works would be in the lands of the private persons.

22.9. The importance of ground water resources in the country in general and in southern States in particular was described above. There should be a quick survey of underground water resources in drought affected areas which may be based on the existing counter surveys. The scheme for digging of wells should be undertaken even in private lands. In drought affected areas such a system will provide employment to the local people at normal P.W.D. rates. When water has been struck the amount spent on the well should be treated as a loan recoverable from the beneficiaries subject to 25 per cent of the loan amount being treated as subsidy. This procedure would avoid uncertainty as to whether water would be struck or not. If there are a few cases where the wells have failed, the expenditure incurred in respect of such failures should be charged to the provision earmarked for famine relief

expenditure. To implement the well sinking programme in drought affected areas, small local committees including owners of the land should be set up in order to ensure that the money spent for well digging is for the relief of the concerned areas.

23. UTILISATION OF WASTE LANDS :

23.1. Any one who has travelled widely in the four southern States of Madras, Mysore, Kerala and Andhra Pradesh would have been struck by the intensive utilisation of lands in Kerala. One rarely finds a vacant space between plantation of *Tapioca* or Banana. Even inter space in coconut groves is carefully made use of.

23.2. Yet statistical data shows that the cultivable waste land even in Kerala is nearly 4.37 lakh acres, *i.e.*, 4 per cent of the total area. In Mysore, percentage is less but the area is 15.5 lakh acres. Andhra Pradesh has over 40 lakh acres and Madras 17 lakh acres.

23.3. One finds large expanses of uncultivated dry areas even in the intensively irrigated district of Tanjavore and Tiruchi in Madras, Krishna and Godavari in Andhra Pradesh, Mandya and Shimoga in Mysore. Apart from these, there are chronically dry areas with low rainfall where parched lands are often subjected to the ravages of Nature. These tracts are fast losing fertility. Isolated cultivation efforts in these regions with the help of wells only accentuate the barrenness of the tract and offer poor returns to the cultivators. Irrigated fields interspersed with large fallow areas often lie in the track of searing winds that blow the soil these uncultivated lands. The crops under such conditions are very poor and unremunerative.

23.4. *The soil cover.*—The soil cover with dense matty vegetation, lines of trees, etc., which can intercept winds can transform these areas. Large stretches of farm lands in other countries are often divided by rows of trees. In such a protection is deemed necessary to maintain the

productive capacity of the land even in temperate areas, the need for such a cover must be much more so in a hot country like ours.

23.5. The actual picture here is however different. Bulk of the cultivated lands is severely left exposed to the elements of Nature. Even areas classed under pasturages are no shelter for crossing livestock. Hardy plants like Cashew, green manure or fuel trees in these tracts would exert influence on the contiguous cultivated areas, besides being useful in themselves.

23.6. An attempt on these lines is being made through a scheme for improving about 8,000 acres of fallow and waste land in Tirunneveli District. A scheme costing Rs. 4 lakh will help farmers to plant 2,000 acres with coconut and 6,000 acres with cashew. Cocoanuts will be restricted to coastal areas mostly in Ottapidaram and Vilatikulam Blocks. The planters will be eligible to a maximum loan of Rs. 3,500 at the rate of Rs. 350 per acre. A chain of coconut nurseries will be set up for the benefit growers. For the cashew plantations, the loans will be at the rate of Rs. 100 per acre with a maximum of Rs. 3,000.

23.7. A proliferation of such schemes will be the only way to conserve the fertility and maintain the productivity of land particularly in regions with marginal irrigation resources.

24. NEED FOR CO-OPERATION AMONG FARMERS :

24.1. A joint farming effort has its own advantages particularly for small land-holders. They can pool their resources and employ more efficient farming equipments and other inputs which, individually, they may not be in a position to obtain. While many of the joint co-operative farming societies are being subjected to criticism for not having achieved their objectives, an unofficial co-operative effort has been successfully organised near Trivandrum. This was cited during the deliberations of the Seminar.

With the object of weaning the farmers from the traditional method of farming and also of infusing into them a spirit of co-operation and self-help the Department of Agriculture, Kerala, organised sometime back a joint efforts by farmers owning lands continuously in a block of 50 acres in Aranloor Ela near Trivandrum. All crop operations were carried out in common but each farmer was left with the responsibility of supervising his land and was free to obtain full benefit of the produce from his land. Ploughing by the tractors was made possible for all the fields. Every farmer was supervising the ploughing operations in his holding so as to get the work executed satisfactorily. Individual farmers also attended to irrigation of their holdings adequately and rebuilding of bunds for ploughing. A common nursery was raised for the entire area and seedling was sold to the cultivators in allotted quantity depending upon the area at fixed rate. This helped them to obtain a uniform of crop preventing thicker plant in some holdings than others. Planting, however, was staggered to suit the availability of labour. The same type of seeds were used and seed rate was also at 10 Kg. per acre.

24.2. Plant protection measures were carried out in the nursery and individual farmers were allowed to pool the quantity of seedling allotted to them. Fertilisers, etc., were applied in all the holdings basically before transplanting. Transplanting was done with seedlings in lines 9" apart with 3" between hills. Controlled irrigation with draining of water completely according to a fixed schedule was employed. Plant protection was done free of cost by some leading farmers. The harvest yield was 3,000 to 3,900 lbs. per acre as compared to usual output of 1,200 lbs. After the harvest the area was ploughed with tractor and was mixed with cow-peas. The cultivators were quite satisfied and the area has come to be recognised as a place fit for demonstration of a new crop variety and new methods of cultivation. It was pointed out after the citation of example that a similar effort should be made in the other

parts of the country as that example was a fitting instance to exhibit the co-operation among the farmers.

25. CREDIT FACILITIES :

25.1. Provision of credit for the farmers has been recognised as one of the most important inputs in increasing agricultural production. Several aspects are considered in this connection. While dealing with this subject, three aspects stand out as prominent. First, what is the agency for disbursing the rural credit? Whether we have any agency at all in the field? Secondly, are we satisfied about the volume of credit which is being made available from the various agencies? Thirdly, what are the inevitable factors which are impeding the free flow of credit to the needy farmers?

25.2. Regarding the agency for disbursing the rural credit, it is a fact that co-operative agency is the only one in the field. Discussions arose regarding the suitability or otherwise of this agency for handling the rural credit. It was pointed out that it is too late to begin adopting the suitability or otherwise of an agency which has been recognised as a matter of national policy not only for the disbursement of rural credit but also providing other services to the rural people. It is an accepted factor that no agency in this sphere of rural credit can succeed unless it is itself rooted in the people and no organisation can succeed unless it is organised on democratic lines. If these two axioms are noted, there is no reason why another alternative to the co-operative now obtaining should be thought of. Two arguments regarding whether the co-operative institutions should have an alternative agency or whether there should not be a competitor to the co-operative agency came up for discussion. In this connection, it was pointed out by some that there would be no harm if alternative institutions enter the field of rural credit because co-operative will then be able to exert themselves and try to prove more beneficial to the people. It was

argued on the other hand that there should not be an alternative agency to the co-operative agency because the policy of the Government of India is to encourage the co-operative movement and if rural credit is entrusted to the other agencies instead of supplementing the co-operative agencies they may supplant them. Thus they may come in the way of progress of the co-operative movement itself. It was also argued how other agencies cannot prove as worthwhile as the co-operatives. There were also arguments as to why there is need for an alternative agency as the co-operative institutions would alone meet the demands of the rural people.

25.3. Reasons for the unsuccessfulness of the co-operative movement were discussed. One of the bottlenecks for the unsuccessfulness of the co-operative movement in general and the failure of the attempt by the co-operative institutions to provide adequate rural credit may be due to the time taken for sanctioning loans after the applications are received. It was pointed out that this time-lag should be reduced to the minimum. Another drawback is the insistence of some sort of security for the sanction of loans. Security should no longer be the basis for sanction of loans. Credit should be advanced without insistence of security regardless of fact whether one is land-holder or tenant. The next draw-back for the unsuccessfulness of the co-operative credit was that there has been a considerable misutilization of the co-operative credit.

25.4. To remedy the drawbacks pointed out above, the following suggestions were made :—

(1) The Reserve Bank of India is stated to have suggested a scheme. Under that scheme a field worker should go to every district and decide the scale of finance required per each crop. The scale should be based upon three components: component A includes the cost of cultivation on the traditional basis and should be available to cultivators who do not wish to take up progressive farming and carry on for vocation on traditional lines.

Component B consists of the cost of imports only and will be available to all those who are prepared to take it in kind; and component 'C' will cover 50 per cent of Component B to enable them to meet extra cost of labour which is necessary for applying fertilizers, insecticides, etc. Any cultivator who has got land and who wants to grow a crop and who is a member of a co-operative society can avail himself of the credit according to the scale.

25.5. There has not been proper recovery of the loans due to drought conditions prevailing in certain areas. In the matter of recoveries no mercy should be shown to wilful defaulters and there should be no hesitation on the part of the authorities to institute legal proceedings and to take coercive methods in the case of wilful defaulters.

25.6. It has been estimated that atleast 1/3 of the total number of agriculturists required assistance. The amount of assistance that has been given is not even a small fraction of the total requirements. It has been estimated that during the last 15 years, the volume of credit has increased from 3 per cent to 30 per cent. This, in fact, is the result of commendable exercise on the part of the administrators and others concerned with it. Yet, it is being heard that the farmers will not get loans because either the Societies are not functioning properly or the loans are not channelled through it. It was also stated that the vested interests have caught hold of the co-operative movement for their advantage. Ideologically, the co-operatives are the best but is it not the time to relax ideological considerations a little bit for increasing food production? A suggestion that emerged in this connection was that along with co-operatives, commercial banks should also be encouraged to enter the field of agricultural credit. In this connection, the instance of the Syndicate Bank which has done a commendable job in lending money for the purchase of power tillers was quoted. When it is a fact that we are not covering even 30 per cent of the credit requirements of the farmers under co-operatives, it was felt that this

suggestion should be implemented and the credit given by the commercial banks to the farmers should be guaranteed by the State which will go a long way to help the farmers to get more credit. The products produced either in the agricultural or industrial field should be marketed in such a way that the producers would get atleast some profit. Otherwise there would be no incentive to production. Therefore, it was argued that the co-operative marketing should be geared up towards that end.

25.7. On the basis of the above discussions the Seminar recommended that :—

(a) to ensure that the inputs are made available in proper time, the co-operative organisations should be strengthened and whenever there is deliberate inaction or inefficiency, steps should be taken to reconstitute and revitalise the co-operative societies. At present, the rules provide for removal only in cases of misappropriation or similar irregularities or failure. It is necessary that the assistance should be required to hold the meetings at the regular intervals.

(b) in addition to co-operative agencies, Commercial Banks may be permitted to make credit available in the rural areas in competition with the Co-operative institutions.

26. CREDIT LINKED WITH MARKETING :

26.1. Closely linked with the credit is proper marketing and price policy. The common criticism about the co-operative credit is that credit given is not being utilised for the purposes for which it has been sanctioned. A suggestion was made that credit may be given in kind and not in cash to make it more effective and to prevent its misuse. Credit linked with marketing and supported by incentive price would go a long way in increasing production.

27. AGRICULTURE MARKETING :

27.1. Two factors which are acting as disincentives to increased agricultural production are lack of stability in the price structure and lack of adequate facilities for storing the food grains. These two aspects were discussed in detail and it was recommended that :—

(a) Prices of agricultural products should be fixed at levels fair to the producers and the consumers and adequate to generate the necessary impetus for increased production. The price maximum should be used as an instrument for stimulating agricultural production.

(b) The facilities for storing, grading, processing and marketing agricultural produce should receive greater attention.

28. TRAINING OF FARMERS AND EXTENSION WORKERS :

28.1. The tardy progress on the farm front has often been ascribed to the lack of adequate technical competence at the basic level for tackling farmers. It has been frequently pointed out that the Village Level Workers are not fully equipped with knowledge about the farming and its intricacies so as to make them better informed than the cultivators.

28.2. The farmer, no doubt, has a sound and intimate knowledge about his land and how it would respond to different factors and treatments. Even so, his study of the land has been limited to the treatments that he has been able to apply to it. He has also to be tuned through suitable training to understand the nature and import of the innovations that are sought to be introduced in his holdings. Therefore, the need for training of farmers and extension workers, particularly the younger generation, is of vital importance.

28.3. The training camps for farmers, are to be organised well before both the kharif and rabi seasons as

farmers can illafford to waste time in travelling long distance or stay from their holdings for long, it is considered better to locate the training centres as far as possible within the walking distance of a group of farmers.

28.4. It often happens that after the training, the farmers forget about the newly acquired knowledge and go back to the traditional ways. To keep the enthusiasm and interest infused in the training camps discussions group have to be organised in villages particularly in the areas of high yielding varieties.

28.5. Farmers of one area may learn about the methods adopted by their counterparts in other areas and for this purpose exchange visits of farmers between the States has to be made more frequent.

28.6. Rural youth programmes have not been given adequate importance. They should form an integral part of the agricultural extension programme. Such a movement would have to be through organisational setup from the village to the national level.

28.7. High-yielding varieties programme may warrant special training not only to the farmers and extension workers at the village level but also to officers in the higher positions in Agricultural Universities or National Research Institutions.

28.8. The need for spotting out good workers at the village level and encouraging them by giving chances for upgrading training has been stressed along with the upgrading of training centres in the States as a means of intensifying training. Farm women should also be given training in agriculture and at the field level, gramasevaks have to be trained in Gramasevaks' Training Centres which have been set up in all the States. The training methods in these Centres should try to overcome the bottlenecks that are obtaining in the fields.

28.9. While the need for the proper training is considered, the amenities to Gramsevaks should also be a point for consideration. The working conditions of Gramsevaks as compared to others are more onerous.

28.10. There is need to select proper persons who have enthusiasm in rural uplift for the posts of Gramsevaks. In fact, it is often experienced that many of the Gramasevaks are not aware of the role they have to play in programme planning.

28.11. Since the programmes from the Blocks are taken to the villages and the Gramasevaks try to make people accept them, the programmes should be chalked out considering the local conditions and problems obtaining in the concerned areas. The Gramsevaks should be taught to give systematic visits to the villages in their jurisdiction. All villages should receive equal treatment in the matter of visits from Gramsevaks. The time at his disposal should be utilised to the fullest extent. Thus they should have a clear cut plan in implementing the programmes.

28.12. It is clear from the above that there is need for training farmers and extension workers to obtain the full benefits from agriculture and other allied fields.

FARM PUBLICITY.

29. METHODS :

29.1. Indian farmers are slowly emerging from the cocoon of traditions and are realising the usefulness of some of the modern innovations in agriculture. It is, however, held by many that this process of changing over to the new attitude to farming needs to be accelerated. But it is also stated that this can be achieved only by good deal of intimate contact with the rural folk and with persuasive and tactful methods.

29.2. Steps taken by the official agency in this direction seem to be inadequate by themselves to cope with rural population—numerous and with diverse needs—spread over this vast country. The answer, according to experts in rural development, lies in the willing co-operation of the voluntary agencies in programmes to bring to the farmers better methods of farming and convince them of their usefulness.

29.3. Farmers' organisations and co-operatives in Denmark and Sweden have contributed largely to the efficiency of agriculture in these countries. Even highly technical operations like reclaiming of land from sea and planning and implementation of farm programmes are ably handled by the voluntary organisations of farmers in the Netherlands. Introduction of modern techniques, providing the necessary equipment for these techniques and helping in marketing of the agricultural produce form part of the functions of the Chambers of Agriculture in Yugoslavia.

29.4. In India, unofficial organisations like Lok Karya Kshetras and Farmers Forums in various States have to some extent supplement efforts made by the official agencies by improving methods of farming and conditions of living in villages.

29.5. For forging closer contacts with farmers, such unofficial bodies are deemed to be eminently suited. They are also helpful in inculcating a sense of discipline particularly among the farmers in matters like controlled use of irrigation water, proper conservation of soil fertility and structure, better preservation and utilisation of farmyard manure scientific beginning and up-keep of cattle, timely culling of scrub bulls and adoption of prophylactic measures against diseases and pests of crops and live-stock.

30. EFFECTIVENESS :

30.1. Ocular demonstrations of improved agricultural practice are effective means for disseminating farm knowledge of field level. But adoption of new techniques

under possible good results from these have also been found useful in evoking keen interest in innovations among farmers. Such shows are often organised in connection with important functions in which large numbers of rural people participate. A tendency to overdo the display by including too many items of aspects often blunts the edge of the show and fails to make an effective impact on the minds of rural people about the utility of the exhibits. The large number of objectives and features leaves a fleeting impression in the minds of the villagers and defeats the performance of the show—of inculcating intensive interest in some desirable projects, which could benefit them most. The details of crops may be exhibited in detail in separate sections descriptive charts, pictures, cropping schedule may also be portrayed for the benefit of the farmers which will educate them on the intricacies in growing those crops. Types of fertilisers and plant protection equipment will also be displayed. Progress in Animal Husbandry may also be depicted in a vivid manner.

31. FARM NEWS :

31.1. New techniques and more outputs have transformed farming into a real industry in other countries and India is aspiring to pick up speed in development in this field. One of the important factors contributing to such dynamic efforts is the extension measures adopted in other countries employing all means of conveying farm information. Among these the radio has come in as the most useful not only because of the quickness with which farm news can be disseminated but also on account of large number of rural listener that can be covered by these means.

31.2. In India also, farm broadcasting has made rapid strides and through gradual experiments has adjusted itself to the needs and convenience of the rural listeners. The recent innovation in the field is the action taken to follow up the educative efforts and assess their usefulness.

Such a step taken with the aid of experts has helped to modify the programmes so as to become more useful to the farmers.

31.3. The Radio Rural Forum scattered all over have been organised in almost all the States in the Country. Forum will discuss the subject that has been conveyed through rural Radio programmes. The gist of the discussions and points requiring further clarifications according to the forum members are communicated from the All India Radio. Thus two-way link between the listeners and surveyors of information is generally highly helpful in making the programme up-to-date and geared to the regional needs of the farmers.

31.4. The problem-oriented talks by experts in these broadcasts are welcomed by farmers and interviews with skilful farmers provide them practical guidance.

31.5. While successful farmers can enlighten the numerous rural folk on how they are able to perform, the less fortunate brethren also may overcome the defects that block their way to success. It would be useful to interview these farmers also to know why and how our farm progress is not quick enough in realising the envisaged objectives.

31.6. It is clear from the above discussion that the effective farm publicity either through different unofficial organisations or through official bodies including exhibition of films and through the Air has been fully realised but there is need to continue the tempo and to accelerate the activities for better farm benefits. Adequate attention should be paid to extension and propaganda in connection with dissemination of the results of research by the research students and others connected with the improvement of agriculture and animal husbandry.

32. FRICTIONAL UNEMPLOYMENT :

32.1. At a time when the problem of unemployment has been considered as a serious malady in the country, the

problem of employment in the agricultural sector is much more pronounced than elsewhere. In the agricultural section both unemployment and under-employment exist side by side; the distinction between them is by no means sharp. In the villages, unemployment ordinarily takes the form of under-employment. In many parts of the country, during the busy agricultural seasons shortages of labour are frequently reported. But over a greater part of the year a large proportion of agricultural labour and other engaged in allied activities are without continuous employment. The consequent drift of workers from villages to towns only serves to shift the focus of attention from rural areas to the urban, though recent surveys show a somewhat higher rate of unemployment in the towns. This itself is a reflection of the lack of opportunities in the rural areas. Urban and rural unemployment in fact constitutes an indivisible problem. The unemployment problem which has many ramifications is considered as one of the most baffling problems concerning the country with the greatest degree of intensity. At a time like this though several types of unemployment both in the rural and urban sectors are being justified, the existence of the frictional and deflationary types of unemployment are considered as serious bottlenecks to economic progress. The distinction between these two types of unemployment is quite simple. It is just a sharp distinction between the unemployment that exists because there are not enough jobs available in the economy as a whole and the unemployment that exists because unemployed men and the skills and locations do not match. These include those workers who at any time are on the way from one job to another. Prof. Learner has characterized the farmer as deflationary unemployee and the unemployment due to workers having the wrong skills or being located in wrong places to get jobs is called frictional unemployment. Frictional unemployment is inherent not only in the agricultural sector but in the other sectors as well. In fact the existence of frictional unemployment has been considered as one of the serious bottlenecks in the way of increasing agricultural production. The absence of right men at right

places in the hierarchy of agricultural production is noticeable even to a casual observer. A person whose aptitude and bent of mind is for agricultural research is wrongly put as an Extension Officer in which he has no interest at all. Example of this kind could be multiplied in any number. For the successful implementation of the schemes relating to any sectors in the plan, placing right men at right places is very important. In fact, it was suggested during the deliberations of the Seminar that the man-power Cell in the Governments of the States should undertake studies on this aspect of man-power utilisation.

33. ROLE OF ADMINISTRATORS :

33.1. The role of administrators in a developing economy was discussed. It was pointed out that the role of administrators is no doubt important. It was stressed that administration is only a means to an end and that it is not an end in itself. The administration can only be as competent as the general body politic. The river cannot flow in a landscape higher than her source. Therefore, though the administration is important, it cannot be all important.

34. SUPERVISION OF DEVELOPMENT ADMINISTRATION AND REVENUE ADMINISTRATION :

34.1. To-day starting from the higher level to the lower levels particularly starting from the District level the administration connected with the development activities and the administration connected with the revenue matters are being handled by the same authorities. It was pointed out during the deliberations of the Seminar that to-day by combining Revenue and Development functions, we have made both development work and the revenue collections suffer. It was emphasised that in the interest of efficient administration, these two aspects should be handled separately.

35. OFFICIAL JURISDICTION OF OFFICERS :

35.1. It was felt that the areas under the charge of Officers in some departments are much larger than those incharge of the authorities under Police Department, Revenue Department, Public Works Department, etc. The areas under the authorities in the agricultural department as also the department of Co-operation are very wide. It would be desirable to have smaller jurisdictions. It was pointed that the Public Works Department and the Revenue Department are able to function effectively because they have a hierarchy of Officers with smaller jurisdictions.

35.2. Recently the Government of Mysore have reorganised the Departments of Agriculture and Co-operation.

36. INDUSTRIAL ESTATES :

36.1. At a time when there is pressing need in the country to hasten industrialisation and rapidly improving levels of living, the importance of the institutional techniques and their application to the basic problems of initiating and sustaining the development of small and medium-scale industries needs no emphasis. The establishment of industrial estates is one such technique evolved for industrialising the country.

36.2. One of the principal inhibiting factors with which the small industrialist has to contend is lack of suitable factory space with adequate facilities for water and power. Acquiring lands, buildings and other facilities not only takes a great deal of time and energy but also locks up substantial portion of meagre capital of small industrialists. The industrial estates have been envisaged as an effective means by which the small industrialists can save his efforts, time and capital in setting up a factory.

36.3. The estate is an attempt to provide on a rational basis good accommodation and other basic common facilities to groups of entrepreneurs who would otherwise

find it difficult to secure these facilities at a reasonable price. These facilities are expected to be provided economically because of the operation of the economies of skill in the construction of a large number of factories. The estate also makes possible the setting up of common technical, workshop, repair and other services, which would not pay for one small factory alone but may pay for a number of them.

36.4. At a time when the unemployment and underemployment are the prevailing economic maladies in the country, the need for industrialisation to provide employment opportunities has become imperative. Further the unemployment and underemployment are the results of fundamentally disproportionate relationship between population and the use of available land resources. Rapid and continued increase in population, especially within the last half-a-century has led to a situation in which there are far too many people engaged in agriculture. It is essential that a balance should be struck between development of agriculture and industry. The programme of industrial estates is one of the measures adopted on a countrywide basis to achieve that goal.

36.5. It is clear from the above paragraphs that the need for setting up of industrial estates which have been defined as "a tract of land which is sub-divided and developed according to a comprehensive plan for the use of the community of industrial entrepreneurs" is found all over the country.

36.6. These industrial estates are being started with the main object of providing immediate large-scale employment and as a method of ensuring a more equitable distribution of national income. They are also an effective means of mobilising the resources of capital and skill which might otherwise remain unutilised in the areas concerned. Some of the problems that unplanned mechanism tends to create are expected to be avoided by the establishment of

small centres of industrial production like the industrial estates all over the country. Among other objectives of industrial estates are :

(1) to relieve the existing congestion in industrial areas and big towns and thus serve as a tool of city planning;

(2) to stimulate the growth of small industries in the township serving some major industrial plants and thus promote growth of auxiliary industries ; and

(3) to decentralise industry towards small towns and large villages and thus control urban growth and regulate allocation of industries.

36.7. To enable the Estates to implement these objectives, all the prevailing methods of assistance, advice for the promotion of small scale industries such as technical advice, marketing aids, financial assistance, greater availability of raw-materials and power are to be combined. If the above objectives are to be fulfilled by the industrial estates established, there is need for proper thinking before the industrial estates are established because the location of industrial estates will have to be guided by scientific factors which contribute towards the success of the estates. In fact, scientific location of industrial estates has been considered as a necessary adjunct of industrial efficiency. It is a problem which is closely connected with that of the size of the estates which is assuming overwhelming importance in recent years. While thinking of 'minimisation of cost', one has not only to think of the 'optimum size', but also the 'optimum location' of industrial estates. The optimum of projection may vary with different localities due to the conditions which a locality may possess over another. Thus a region which is better equipped with resources in power, raw-materials, labour and transport may easily be a centre of industrial concentration. This concentration may be quite desirable from the point of view of efficiency in a narrower sense. Optimum size of the Estates is necessary from the point of view of reducing the over-head cost. No

doubt due weight should be given to the economic considerations in deciding the choice of location of industrial estates. But, the question should also be considered in a broader perspective, keeping in view broad 'social' and strategical considerations. In this connection, it may be relevant to point out that from the limited stand point of each industry the dominant consideration must always be to secure the maximum efficiency of production and distribution. Indeed, no industry can prosper unless it is located at a place chosen from this point of view. Experience shows, however, that if industrial location is governed by this consideration alone, it may easily give raise to varied social and economic evils such as excessive congestion in particular localities, concentration in vulnerable areas and wide disparities in living standards of different sections of the population. Modern industrial communities which have suffered from these evils have begun to feel the need for some kind of regional planning which would aim not merely at a maximum efficiency of production and distribution but also at an optimum distribution of industrial activities based on broader economic and social strategical considerations. It is thus clear that there is need for locating industrial estates on sound principles. Instead of having industries in scattered places, an industrial estate should bring them together. The success of an industrial estate depends on, among other things, its proper location. It has been observed that instead of attempting some diluted action and thus reducing the chance of positive results, it would be purposeful to select certain areas for intensive action. The area so selected should be the best of the available ones. While making such a choice sufficient forethought should be applied and economic consideration should alone play the dominant role in selection. If consideration at this stage becomes loose, the end would be catastrophic and, therefore, the success of an industrial estate depends on its proper location. To quote an authority who has emphasised the need for avoiding the loose considerations at the initial stages of location, "the present loose ends will remain loose around us". The location criterion is, therefore, vital.

The industrial estates should be located keeping in view of the objectives of industrial estates' programme. While doing so the following deserve consideration :—

(1) Foremost consideration that one has to pay relates to the availability of raw materials ; entrepreneur with sufficient resources ; and suitable industrial climate.

(2) Careful preliminary planning backed by thorough investigation is necessary to make the State economically viable. Before locating the estate, the area should be thoroughly surveyed by experts in the field keeping in view required resources ; men and material ; the infrastructure available and to suggest prospective lines of manufacture. It is this preliminary survey which forms the bedrock on which the future of the estate depends.

(3) Geological surveys may also be necessary before the estates are located. Soil must be fit to carry weight of the heavy machines.

(4) The estate should be well connected by a net work of road system, preferably railways.

(5) The industrial estates should be located in such a way that they do not encourage further concentration of population in large urban centres. On deciding the location of estates especially the smaller estates, these considerations should be kept in view so that preferably they are developed in or near the town of comparatively small size.

(6) It should be useful to select for different regions the industries for which available conditions exist and which should, therefore, be specially permitted and assisted.

(7) In the case of rural industrial estates, it is necessary to select places known for rural industries which are either existing or vanquished and for the growth of which there are potentialities in men and material.

(8) One of the criteria which needs emphasis in recent years relates to the existence of electric transmission lines for the location of estates.

36.8. To put it in a nut-shell the criteria which should be followed while locating the industrial estates, may be summarised thus :—

In selecting sites for development areas, due regard should be paid to the availability of resources including power. The programme of development of small industries particularly in rural areas may not make much headway in the absence of power. The lack of power supply, need not, however, be a deterrent factor for starting small scale units in areas where industrialist would be readily available and willing. While, by and large, industrial estates should be located in villages and towns which lie along existing and proposed transmission lines with adequate power supply, there should be no bar for setting up of industrial estates merely because there is no availability of power. In the latter case, there should be need for a provision for locating generating sets for the benefit of such areas. In this connection, it may be pointed out that the working group on Small Scale Industries constituted to decide the programme of work for the 3rd Five Year Plan in the country has said that 10 per cent of the outlay on industrial estates would appear to be a conservative assumption of requirement of power.

36.9. The location of industrial estates should be based on a scientific application of the useful criteria which have been analysed briefly above. The industrial estates should be so planned that there is balanced industrial development in all areas.

36.10. On the basis of the above discussion, it was recommended that ;

36.11. Industrial Estates should be located in areas which are suitable for such development ; and that full governmental assistance and other needed facilities should be provided to industrial estates so located.

37. LOW PRODUCTIVITY IN INDUSTRIES :

37.1. Low Productivity in Industries has been a matter which is attracting the attention of the administrators, Industrialists and all others concerned with the economic development in the country. It is reflected by the figures of productivity that its level in India has been very low when compared to other countries. Since increasing the productivity level is one of the important aspects in a country's economy the causes for low productivity and the methods by which they may be overcome were discussed.

38. POWER SHORTAGE :

38.1. One of the causes for low productivity has been the power shortage. It was pointed out that power shortage has been of the order of 30 to 50 per cent in the country. The Andhra Pradesh and the State of Madras have been very unfortunate in the Southern region of the country and the shortage of power has inhibited industrial development in those States. This bottleneck could be remedied by having recourse to vigorous implementation of the schemes relating to power generation distribution in the different parts of the country particularly in those areas where there is chronic shortage of power. It was therefore, suggested that greater emphasis should be placed on power development schemes.

39. FLUCTUATION IN VOLTAGES :

39.1. Constant fluctuation in voltages and shut-down has hindered the productivity level in the country to a considerable extent. This is a problem which could be handled by technical persons and the defect in this respect could be remedied by them. The frequent voltage fluctuation and power shut-down is, thus, a matter which should come within the purview of the technical personnel. It was felt that due attention should be paid to regulate voltage fluctuations and avoid frequent shut-downs so that the productive capacity is fully utilised.

40. INFRA-STRUCTURE :

40.1. The building up of infra-structure in matters of transport and water facilities is an important aspect. Greater emphasis on the provisions of this infra-structure is required to be paid at the governmental level. The amount to be spent on building up of infra-structure should be decided on rational principles. The country which spends a larger amount on building up of the infra-structure would contribute to more productivity. Therefore, it was felt that in the industrial development programmes, the infra-structure that contributes directly to production should be emphasised and undue expenditure on buildings and similar items should be reduced.

41. PROBLEMS CONNECTED WITH LABOUR :

41.1. The Indian Industrial Development has been recently confronted with conflicting factors creating dilemmas. One such conflicting factors relates to the labour saving device and the consequent unemployment in the country. Attempts are being made on the one hand to create more and more employment opportunities which are one of the broad objectives of our national policy. On the other hand, the diffusion of the labour saving device has been felt absolutely essential to increase efficiency in industries. The result of such a diffusion would be the immediate unemployment. A question arises at this point as to how these two conflicting aspects could be reconciled. If the labour saving device are introduced, the cost of the product would be cheaper, but if one employs more people, then the cost of the product would be more. So the reconciliation between these two becomes more important from the point of view of profitability. If an industry carries more staff than what is required, then it becomes necessary to retrench ; but if it has carried the same staff even after the introduction of the rationalisation, it affects its profitability. In the event of retrenchment of labour, the Trade Union would also interfere. In the circumstances, policy aiming at rationalisation and at the same time not resulting

in immediate unemployment should be evolved and tried. The rationalisation process should be introduced not at all stages of an industrial establishment but could be tried at the initial levels. So that the process of rationalisation would be slow and the rationalisation would be effected without tears. The lack of initiative on the part of the management to utilise the equipment they have, was cited as one of the causes of low productivity. Not only there should be initiative on the part of the head of an industrial institution, but incentives and monetary rewards should be given to the employees in an undertaking. The labour-management relationship is one of the important aspects in an industry. This should receive the attention it deserves.

41.2. One of the causes of low productivity in industries has been administrative delay. An industrialist has to put up with a lot of delay in matters like getting licences to start industries; getting raw-materials, etc. It is the duty of the administrators be they at the district level or State level or Central level to see that these delays are reduced to the barest minimum. The gravity of these delays are a real handicap to the industrialists. The inadequate co-ordination between the research laboratories and the industries has been one of the causes of low productivity. While on the one hand there has been much research in the productivity techniques, the results have not been utilised by the industries. There has been a network of laboratories, about 30 in number, in the country. But the impact of the research done by these on industries has been comparatively limited. Therefore, there is need for co-ordination between the research laboratories and the industries in the country. The shortage of man-power at the middle level cadres has been another bottleneck. The engineering graduates of the different colleges and other academic institutions have not been of much utility to the industries who have to run on a lower level. The type of instructions imparted to these graduates has been more academic than practical. Even the type of instructions

given to the candidates in the polytechnics is also of a similar nature. The engineering education must have strong practical bias. The industry needs men with practical experience and not mere graduates. Therefore, emphasis must be on the practical aspects of the courses given in the different polytechnics of the country. In this connection, it was said that almost every State in the country except the State of Punjab has engineering education which is merely academic without a practical bias. The Office management technique was emphasised as being necessary for the proper running of the industry.

42. CO-ORDINATION :

42.1. The Co-ordination of activities between the higher and the lower levels on the one hand and the different departments on the other was felt important. Lack of co-ordination between the Agriculture Department and the Industries Department on the one hand and the Departments of Agriculture and the P.W.D. on the other was cited. It was emphasised that there should be co-ordination between the departments concerned with development activities and the need for fixing up the individual responsibility for each functionary connected with development was also emphasised. Co-ordination between the different departments connected with developments on the one hand and between the different activities of the same department on the other is a fundamental requisite for the success of plan schemes. To elucidate, let us take the example of power development. If there is no co-ordination between the scheme connected with power generation and the scheme connected with the transmission of power, the power generated could not be transmitted to the needy places; *e.g.*, the abundant power produced by the different units of Sharavathi Project has not been fully utilised in recent years for want of transmission lines. Co-ordination between the different departments is also necessary. *e.g.*, the Electrical transmission lines should be drawn in consultation with the Industries and Agriculture

Departments because it is those departments which could assess the industrial and agriculture potential in areas which need power supply. If there is no co-ordination between those departments and if electrical transmission lines are drawn in areas where there is no potential for their use, the power generated will not be utilised to the full extent. It is therefore needless to stress that there should be co-ordination between the different activities in one and the same departments and the activities of the different departments.

42.2. Co-ordination has an intimate relationship with the concept of administration also. If our administration is poor, then co-ordination will also be poor. If the administration is good, the co-ordination of activities would be easier.

42.3. Co-ordination of the activities connected with industrial and agricultural development.—It is not merely the production of foodgrains that constitutes agricultural production; but industry depends on agriculture for its raw materials. It is estimated that 50 per cent of the national out-put is accounted for by agriculture. If agriculture fails industry also fails and if it succeeds then industry also succeeds. It is because 60 per cent of the raw materials needed by industry comes from the agriculture Sector. Therefore, it is very necessary to formulate schemes for industrial and agricultural development in such a manner that there will be some sort of co-ordination between these two Sectors.

43. THE NEED FOR PROPER AUDIT :

43.1. The concept of audit, the different types of audit and how the present procedures of audit are time-consuming and how they are not quite suited for a business organisation were some of the points which were discussed. The importance of audit in an organisation of any type needs no emphasis. The audit by Chartered Accountants is

absolutely inadequate because it is not the type of audit which covers the propriety audit which is the need of the day. It is not enough if the management produces vouchers for the expenses incurred. What should be examined is, whether the money has been spent wisely and rightly. There should be audit whenever the public money is spent. It is also important that due emphasis should be placed for auditing, items involving expenditure of a lakh and above and so much emphasis need not be laid on expenditure of small sums because the time spent for audit purposes in connection with the expenditure of small amounts would be a waste. Therefore, during the deliberations of the Seminar, the urgent need for a review of the existing procedures was emphasised. In this connection it was felt that there is need for propriety audit, be it a public sector undertaking or a private sector or any other type of organisation or business management. The importance of such audit needs no emphasis particularly in the context of spending the tax payers' money. There is need for ensuring the performance of right things and showing that only right things have been done.

43.2. A distinction was drawn between the management audit and the normal commercial audit. Management has an object and the management audit looks for the fact whether that objective has been fulfilled by the expenditure incurred by the organisation. This type of audit is called the management audit. The management audit is in vogue in large number of companies in countries like America and England. It was felt necessary to have this type of audit not only for the private sector or public sector but for all sectors for, we have got an objective wherever we spent money. There is need to conduct management audit for such organisation. The commercial audit only looks after the expenditure part of it and does not look at it from the objective part of it. The concept of management audit is thus different from the concept of commercial audit and so the personnel of commercial audit will not be able to do the work of the management audit. There is thus need

for training such a type of personnel who will be able to see whether from the point of view of the objective, results are obtained against the background of the organisation, the practices and procedures. As pointed out earlier this type of management audit has come into vogue in advanced countries like America and England and it is slowly making its way in India as well.

43.3. In this connection, it was suggested that the State Government should constitute review Boards consisting of senior Officials and non-official Industrialists to go into the working of these public enterprises. In this connection, it was suggested that the Chief Secretary, Secretary in charge of Industries and some non-official industrialists may constitute themselves as a Board and see whether industrial enterprises of the State Government are run in a proper manner. They should offer opinion on all aspects of the working including their finances.

43.4. The need for bringing out a manual for the management of the industrial enterprises was also emphasised.

43.5. On the basis of the above discussion the Seminar recommended that :—

(a) a review Board may be constituted at the State level with a representative of audit to conduct performance audit of the public sector enterprises. A representative of finance should be included in the Board of public sector enterprises ;

(b) there should be specific training in the auditing of public sector enterprises.

PART II

SUMMARY OF THE RECOMMENDATIONS

SUMMARY OF THE RECOMMENDATIONS

1. The process of planning should be sophisticated at the National and State levels and specific at the lower levels. (3.1.)

2. While fixing the targets, due consideration should be given to the resources available and the capacity to achieve them. The targets should not be too high or too low. There should be rationality in the fixation of targets. (6.1. to 6.8.)

3. In the matter of agricultural production, there should be no policy commitment to particular ideologies such as Co-operation or Panchayat Raj. The objective should be to ensure that certain tasks such as distribution of fertilizers, availability of credit and increasing production are accomplished rather than to derive satisfaction that a certain ideology is pursued. (7.1.)

4. (a) The fertilizer production should also be entrusted to the private sector. It should not be a monopoly of the public sector. (8.1. and 8.2.)

(b) Fertilizers may be obtained on loan basis from other countries till such time as we are able to produce fertilizers in sufficient quantity. (8.1 and 8.2)

5. (a) Sustained efforts should be made to standardise agricultural implements and machinery so that the repairs and replacements will be made easier.

(b) Adequate attention should be paid to the manufacture of spare parts so as to ensure maximum use of the available machines. (9.1.)

6. (a) The pest Act should be brought into force to compel the owners of land in certain tracts to adopt pesti-
cidal measures necessary to ensure the protection of the
crops since the failure of even one land owner might nullify
the benefits that are likely to be derived from such measures
by other ryots in the tracts. The provisions of the Act
must be adequate to ensure effective protection on the one
hand and prevent harassment to the ryots on the other.

(b) There should be an organisation for quality
control of pesticides throughout all lines of supply.
(10.1. and 10.2.)

7. Necessary training should be imparted to the
village carpenters and blacksmiths to enable them to repair
the improved implements. Necessary training should be
imparted to agriculturists who take to mechanisation for
undertaking maintenance and repairs. It is also necessary
to train suitable personnel who will move about in the
villages periodically for undertaking repairs to agricultural
implements.
(11.1. and 11.2.)

8. Where there are large blocks of lands which cannot
be reclaimed without heavy expenditure and when there are
no persons or agencies coming forward, Joint Stock Compa-
nies may be invited to take up reclamation of cultivable
lands and cultivate the lands. By way of incentive to such
companies the amount spent by them on reclamation should
be exempted from Income Taxation. There should be no
ceiling limit on the expenditure of land reclaimed and culti-
vated by Joint Stock Companies.
(12.1.)

9. Land Reforms should be speedily implemented and
special attention should be paid to the prevention of frag-
mentation of holdings below a certain economic unit.
(13.1.)

10. Measures to bring about a breakthrough in the
traditional and age-old conservative methods that our
farmers are adopting in present day farming should be
explored.
(14.1.)

11. There should be systematic crop Planning based on the soil condition of the area and the availability of water and such other natural facilities. (15.1.)

12. Agriculture should be linked with agro-processing industry. There should be an agro-industry corporation on an all India basis which will provide credit facilities for setting up agro-processing units. (17.1.)

13. Local manurial resources such as night-soil, cowdung, green manure should be fully utilised. Adequate encouragement should be given to municipalities and other local bodies such as Panchayats in the initial stages to develop these manurial resources. Night soil and green-manure should be supplemented by liberal use of fertilizers. (19.1. and 19.8.)

14. The major irrigation projects should be planned in such a manner that there will be absolute co-ordination among the different items of construction under the project like the construction of major dam and the field channels, etc. It is also necessary to see that the construction in all respects is completed simultaneously. (20.1. to 20.3.)

15. Soil Survey Stations and Soil Survey Teams should be set up to advice the ryots about the proper time and the proper quantities in which fertilizers should be applied to their lands keeping in view the cropping pattern. (21.1. to 21.3.)

16. There should be quick survey of underground water resources in drought affected areas based on the existing contour surveys. A scheme for excavation of wells should be undertaken even in private lands. In drought affected areas such a scheme will provide employment to local labour at normal P.W.D. rates. When water has been struck the amount spent on the well should be treated as a loan recoverable from the beneficiaries subject to 25 per cent of the loan amount being treated as subsidy. This procedure

would avoid uncertainty as to whether water would be struck or not. If there are a few cases where the wells have failed the expenditure incurred in respect of such failures should be charged to the provision earmarked for famine relief expenditure. To implement the well sinking programme in drought affected areas a small local committees including the owners of the land should be set up in order to ensure that the money spent on excavation is for the relief of the concerned areas. (22.1. to 22.9.)

17. There should be optimum utilisation of land by persuading the farmers to raise only those crops for which the soil conditions are appropriate. They should also be persuaded to adopt new techniques for farming. (23.1. to 23.7.)

18. Efforts should be made to bring about co-operation among the farmers of particular areas so that the modern machineries supplied to those areas may be utilised by them on a co-operative basis. (24.1. to 24.3.)

19. (a) To ensure that the inputs are made available in proper time the co-operative organisations should be strengthened and whenever there is deliberate inaction or inefficiency, steps should be taken to reconstitute and revitalise the Co-operative Societies. At present, the rules provide for removal only in cases of misappropriation or similar irregularities or failure. It is necessary that the societies should be required to hold the meetings at the regular intervals.

(b) In addition to co-operative agencies, Commercial Banks may be permitted to make credit available in the rural areas in competition with the Co-operative institutions. (25.1. to 25.7.)

20. Credit linked with marketing and supported by incentive price should form the corner stone for increasing agricultural production. (26.1.)

21. (a) Prices of agricultural products should be fixed at levels fair to the producers and the consumers and adequate to generate the necessary impetus for increased production. The price mechanism should be used as an instrument for stimulating agricultural production.

(b) The facilities for storing grading, processing and marketing agricultural produce should receive greater attention. (27.1.)

22. (a) There is need for training farmers and Extension workers to obtain full benefits from agriculture and other allied fields.

(b) Administration at all levels should be properly oriented and trained to secure the objectives of increased production. (28.1. to 28.12.)

23. Adequate attention should be paid to extension and propaganda in connection with the demonstration of the results of research by the Research students and others connected with the implementations of agriculture and Animal Husbandry. (29, 30 and 31.)

24. (a) Adequate care should be taken in posting the right man in the right place whether it be for research or extension. A man-power planning Board may be set up at the State Level for this purpose. Necessary training should be imparted for the development of proper attitude among the personnel engaged in agricultural work.

(b) The man-power cell in the Governments of the States should undertake studies on the various aspects of man-power utilization in the field of agricultural production. (32.1.)

25. The area jurisdiction of the technical officers such as the District Agricultural Extension Officer and the Village Level worker should be reduced in size so that their work becomes more intensive and effective. (35.1)

26. The Industrial Estates should be located keeping in view of the objectives of the Industrial Estates Programme. While doing so, the following points merit careful consideration :—

- (i) The availability of raw-materials, entrepreneurs with sufficient resources, and suitable industrial climate ;
- (ii) Careful preliminary planning backed by thorough investigation to make the estate economically viable. Before locating the Estate, the area should be thoroughly surveyed by experts in the fields with a view to studying what resources, men and materials are available and suggesting prospective lines of manufacture. It is this preliminary survey which should form the bed-rock on which the future of the Estate depends.
- (iii) Geological surveys are also necessary before Estates are located. Soil must be fit to carry the weight of heavy machines ;
- (iv) The Estate should be well connected by a network of road system and also preferably railways.
- (v) Industrial Estates should be located on sound principles. They should be located in such a way that they do not encourage the concentration of population in one place. In deciding the location of estates, these considerations should be kept in view so that preferably they are developed in or near towns of comparatively small size ;
- (vi) It should be useful to select for different regions the industries for which suitable conditions exist.

- (vii) In the case of rural Industrial Estates, it is necessary to select places known for rural industries which have either existed or vanished and for the growth of which there are potentialities in men and material.
- (viii) One of the criteria which needs emphasis in recent years relates to the existence of electrical transmission lines for the location of Estates.

In a nut-shell the location of Industrial Estates should be in areas which are suitable for such development ; and that full governmental assistance and other needed facilities should be provided to industrial estates so located.

(36.1. to 36.11.)

27. (a) There should be adequate co-ordination among agencies concerned with agricultural production. The Department of Agriculture and Irrigation and the Board of Electricity should co-ordinate their work at all levels. Such co-ordination is necessary to ensure maximum benefits to the agriculturists in the matter of utilisation of water through pumps for irrigation purposes. Such co-ordination is essential to ensure full and economic utilisation of water maximising production in the whole ayacut.

(b) There should be close co-ordination between agricultural and industrial sectors for improving and designing agricultural implements keeping in view the regional peculiarities and the cropping pattern. This should be the first step towards the gradual mechanisation of agricultural operations.

(37.1)

28. Greater emphasis should be placed on Power Development Schemes. Due attention should be paid to avoid voltage fluctuations and frequent shut-downs so that the productive capacity of Industrial Units is fully utilised.

(38 and 39)

29. In the Industrial Development Programmes, the infrastructure that contributes directly to production should be emphasised and undue expenditure on buildings and similar items should be reduced. (40.1.)

30. Labour Legislation should be reviewed so as not to impose a heavy burden on Industries. Incentive Schemes should be instituted and implemented so as to raise productivity of labour. (41.1. and 41.2.)

31. Regarding audit procedures:—

(a) A Review Board may be constituted at the State level with a representative of audit to conduct performance audit of the Public Sector undertakings. A representative of finance should be included in the Board of the Public Sector enterprises ;

(b) Specific training should be given to enable proper audit of public sector enterprises. (43.1 to 43.5.)

PART III
APPENDICES

APPENDIX I.

INAUGURAL SPEECH BY SHRI P. GOVINDA MENON,
UNION MINISTER OF STATE IN THE MINISTRY OF
FOOD, AGRICULTURE, COMMUNITY DEVELOPMENT
AND CO-OPERATION.

SEMINAR AT BANGALORE

5 P.M. : 30th August, 1966

India is in a crucial phase of her economic development and progress. Under the Third Five Year Plan two bad agricultural years 1962-63 and 1963-64 were soon followed by a worst drought year in living memory, i.e., 1965-66. As a result, agricultural production in the last year of the Third Plan is likely to be the lowest for the past 8 years. The stability and growth of the overall economy has also suffered a severe setback. There is a widespread feeling in the country that the tempo of economic development should be greatly accelerated and that highest priority should be given to agricultural production. Science and technology have opened vast avenues for progress and it is by the use of this knowledge that India can succeed in her war against poverty and low standards of living. In this context all efforts for creating an awakening in favour of increased productivity should be greatly welcome. For myself, I would today refer only to certain aspects of the problem of increased productivity in agriculture.

Under the Fourth Five Year Plan we are proposing to achieve a break-through in agricultural production primarily by the adoption of a New Strategy of agricultural development and emphasis on its effective implementation. Before talking about the significance of the problem of administration for increased productivity in agriculture, I would like to mention a few words about the new approach to agricultural progress.

In a country of continental dimensions like ours, transformation of agriculture from traditional self-sufficient economy to a modern commercial enterprise calls for a change in the thinking and attitude of 65 million farming families. All this cannot be brought about simultaneously and quickly. We tried it over the first three Plans mainly through the media of Community Development and Panchayati Raj efforts but found that the impact was small because the

whole effort was thinly dispersed over a very large field. During the Third Plan we experimented with the wellknown package approach in Intensive Agricultural District Programme and in the Intensive Agricultural Areas trying to combine an optimum dose of administrative and technical expertise and supplies of requisite inputs like improved seeds, fertilizers, pesticides and credit. This approach showed that, in terms of production and increased productivity, better results could be secured if the requisite inputs were supplied in required quantities over selected high potential areas, rather than their thin dispersion over large areas. Side by side we found that the researches made by our agricultural scientists had resulted in identification of some high yielding varieties of paddy and wheat and hybrid varieties of jowar, bajra and maize which could help in increasing productivity of our relatively most scarce resources viz., soil and water, to the extent of 100 to 300 per cent. The research and experimentation also showed that these high yielding varieties were relatively of shorter duration than our traditional varieties of foodgrains and as such would draw upon irrigation supplies for a shorter period than the traditional varieties. Joining the threads it appeared that production of high yielding varieties in selected irrigated areas supported by full requirements of inputs like fertilizers, requisite types of seeds, pesticides and credit, development of double cropping in single-cropped areas and multiple-cropping in double-cropped areas, could greatly help to raise our agricultural productivity substantially. These are the principal elements of the New Strategy for agricultural development under the Fourth Plan wherein cultivation of high yielding varieties of foodgrains over 32.5 million acres of area by 1970-71 is the most important part. The package programme approach also underlies our strategy for securing quick increases in the productivity and total production of major commercial crops such as cotton, jute, groundnut, tobacco and sugarcane. The success of our new strategy basically depends as to how far it is translated into action on the fields. In other words, our success in achieving self-sufficiency in the sphere of food and agriculture on the efficiency of of administration for increased productivity.

What is the precise role of Administration in relation to increased agricultural productivity? Here I have to place emphasis first of all on the need for a change in the outlook of our administrators. There is need to approach the problem of agricultural production not from the ivory towers wherein the emphasis is on budgeting, accounting, issue of sanctions, etc. All these are no doubt necessary but what is more important is a spirit of partnership and live interest in achieving the Plan objectives. The traditional patterns and attitudes built up during times when law and order was the primary concern

of Government, would not suffice in a Welfare State. There has to be a greater awareness of the country's objectives and a keenness to facilitate the achievement of these objectives. A study by an Expert Committee on Assessment and Evaluation of the Intensive Agricultural District Programme recently made revealed a very sad picture about the inadequacy of the present administrative system for the needs of this Programme. It revealed that system had proved woefully inadequate for the successful execution of the package programme approach. There has been over too much emphasis on conformity while this new idea of intensive development calls for use of discretion in the best interests of rapid growth. The blame is not on individuals but on the system. This administrative structure as all of us are aware, was inherited from a Government whose working was not conditioned by the concept of Welfare State which is the governing principle for the present Government.

For improving the performance of agriculture departments, we have been laying emphasis on a larger role being given to technical personnel. Our appraisal of the agricultural progress in the past 15 years shows that inadequate importance has been given to science, extension and agricultural economics. A more successful administration of agricultural development policies calls for change in emphasis to these directions. It is our belief, that agricultural scientists, soil scientists, specialists in improved seeds, fertilizers and plant protection, etc., expert in marketing and price policies, cost-benefit analysts and evaluation experts should have a larger role in the formulation of agricultural development policies, guiding and reviewing the progress of agricultural economy and suggesting means and methods for getting maximum returns from the use of soil, water and human and animal resources. The old stereotyped approach with emphasis largely on proceduralism and checks and balances and giving minimum of authority and responsibility to the technical personnel, should change. We favour that the technical personnel should be given authority, status and wider discretionary powers in the matter of use of funds and materials, etc., At the same time they should be made accountable for results. They must produce results or otherwise make way for persons with greater technical competence, initiative and drive, who can give results.

The second administrative aspect is a question of bringing about a change in the attitudes and technical competence of the 65 million farming families of India. It is a field where extension machinery has to play a prominent role. In many States, in quantitative terms the personnel for various extension jobs are available, but sufficient technical competence for impressing and convincing the farmers about the superiority of modern scientific techniques of agricultural

production is lacking. This applies more particularly to the field workers. The result is that there is a very low impact on farmers of the efficiency of scientific agricultural and land and water management techniques. To bring about improvements in this sphere, we are trying to strengthen the Refresher Training Programmes for Village Level Workers and other extension personnel, organising special short term training in high yielding varieties for personnel and trying to extend opportunities for promising VLWs to improve their educational qualifications. Large number of agricultural graduates or post-graduates are proposed to be recruited in the coming years for providing technical guidance to farmers. Another way which I have been suggesting is to avail of the experience, skill and practical knowledge of the progressive farmers in each area for spreading the more productive techniques.

In my view Government apparatus alone will not be enough for extension purposes. There is need for farmers' associations interested in acquiring knowledge and encouraging and helping members in the adoption of more productive techniques. A number of Tonnage Clubs have been organised in the country and some of them are quite active. There is need for activating all such associations and also for the organisation of such Farmers' Associations on a much larger scale. We also wish that the existing institutions connected in one way or other with agricultural development, such as Agricultural Credit Societies, Agricultural Marketing Societies, Co-operative Banks and in some cases Panchayats should play a very active role in achieving the goals of doubling the production of foodgrains and other commodities in their areas over a period of 5 to 10 years depending on the potentialities of their lands.

Long enough we have all talked about the backwardness of agriculturists, his traditionist outlook, his non-creditworthiness etc. This has neither done any good to the country nor will it do in the future. Evaluation of the IADP and Intensive Area Programmes has revealed that in spite of illiteracy and poverty Indian farmer is not unduly tradition-bound nor unintelligent. He accepts innovations and new ideas once he is convinced of their usefulness. He is then ready to adopt them provided he has the necessary resources and supplies. What is therefore, necessary is, that the farmer should be enabled to implement new ideas and adopt techniques which give larger production.

If the farmer needs credit for development of land or irrigation or for application of improved seeds or fertilizers to his land, he must have it. If we go by farmer's credit worthiness in relation to his assets for bulk of the farmers the credit facilities will never be

available. We have already made a great advance by the introduction of crop loan system from current year particularly in the areas selected for the High Yielding Varieties Programme. Our long term objective is to spread it in all areas.

In the matter of supplies, there is a big responsibility on the Government, on the Co-operatives and various institutional agencies for making a success of this programme. In the Third Plan we suffered a major setback because while targets for supplies and even indigenous production of fertilizers, etc., had been fixed, the effort for their fulfilment failed to match the requirements of the situation and in consequence agriculture was starved of such inputs. Similarly, targets for power generation and transmission were not co-ordinated with programmes for lift irrigation by pumpsets, etc. Now, however, benefiting from the lessons of the past we have developed new policies. Highest priority is being given within the industrial sector to the production of fertilizers, pesticides and agricultural implements and machinery for various operations such as land reclamation, land levelling, ploughing, harvesting, plant protection, lift irrigation, etc. Very largely, it is adequate indigenous production of these requisities that will provide a dependable base for these supplies. We are giving highest priority to the production of these agricultural inputs by the industrial sector. In our programmes for major irrigation and power also, agricultural needs will get special emphasis.

Next is the problem of organising distribution at lowest possible cost and in a manner which caters to the maximum convenience of the farmers. This is where the State, District and local administrative structures have to play a vital role. I would expect that this Seminar would help in throwing up new ideas and the approaches that may be most suitable in this regard. I would only suggest that efforts should be made by distributing agencies to provide the maximum number possible of the requisites required by agriculturists as also technical guidance for achieving the best results from the available soil, water and other resources of the cultivators.

Before concluding I must mention about the efforts that are necessary for improving the remuneration, the status and the service conditions of various personnel connected with agricultural development and administration. To a certain extent, we have succeeded in our endeavours to improve the status and give greater freedom and responsibility to scientific and technical experts in the Ministry. It is also our endeavour to have an All India Agricultural Service, thus combining the best talent from all parts of the country. We have also set up an Agricultural Prices Commission for keeping the price

situation under continuous review and for advising the Government on agricultural price policies. As you all know an Administrative Reforms Commission is also presently working and we may expect various recommendations for reorientating the administrative structure at the various levels to cope with the changed requirements of economic growth.

I wish success to this Seminar and hope that some concrete suggestions will emerge from it for improving the agricultural administration so as to result in greater productivity in this vital sphere of our economy.

APPENDIX II.

OPENING REMARKS BY SHRI K. N. ANANTARAMAN, I.C.S., CHIEF SECRETARY TO GOVERNMENT OF ANDHRA PRADESH AND DIRECTOR OF THE SEMINAR.

I consider it as a great privilege to be so intimately connected with the discussions of the Seminar on this important subject of Increased Productivity in Agriculture and Industry which is of vital importance especially at this juncture in our country's economy. I should like to thank the Central Institute of Public Administration, the Governments of the three States, the Chief Minister of Mysore State and the Chief Secretary of Mysore to whose dynamism we are indebted for the excellent arrangements made for conducting the Seminar. We are also fortunate in having among us experts who have devoted decades of hard work, to problems connected with Agriculture and Industry. Our production of Foodgrains is about 90 millions and we wish to push up the production to 120 millions during the IV Five Year Plan. Even the most conservative judge would not consider this aspiration as something beyond our capacity. We have got Hybrid varieties of jowar and paddy which give very high yields. Even if we are able to cover 1/3 of our total dry and irrigated areas with these improved varieties it should be possible to reach this target easily.

Experience of the Third Plan has highlighted the need for an integrated approach to the problem of Agriculture and Industries. It is well recognised that these two sectors are complementaries and must be dealt with together and has no radical change is possible without a strong Agricultural base for which the necessary inputs have to be supplied by Industries. The resources now spent on import of foodgrains would then become available for the development of Industries which in turn would again benefit Agriculture.

The unprecedented drought throughout the country has no doubt created a very difficult situation. But one should always be prepared for the worst while always hoping and striving for the best. The food crisis is the biggest challenge facing the country.

The low productive capacity of our Industrial labour has affected our exports, even though our wages are comparatively low. A close study of every process in every industry by experts assisted by intelligent workers might bring out methods for improvement. Labour-saving gadgets and training may go a long way. Slowly and steadily the workers must be made to realise their responsibility and importance in building up the prosperity of our country. There should be an optimum mix of man and the machine to secure full employment without increasing the cost.

The Indian Institute of Public Administration is the proper forum to bring together Administrators and Heads of Departments who are responsible for formulation and implementation of programmes and also important non-officials who are in close touch with Industry and Agriculture of the three States. These discussions will serve to widen our Horizon and may also help us to make concrete recommendations. The State Government of Andhra Pradesh have regarded participation of their officers in this Seminar as official duty. The Regional Branch of Hyderabad is happily to be a participant and thank the Regional Branch of Mysore for the excellent arrangements.

I would also add that the value of a recommendation should be judged by the quantum of benefit that is likely to produce if it is fully implemented. All methods for producing wealth from waste should be adopted to the fullest measure. The proper utilisation of human excreta by the well-known Wardha method in one small village yielded a direct return of Rs. 3,000 in the shape of manure and probably four times that amount in the increase in crop production. Inland pisciculture in an upland village yielded an income of Rs. 27,000 which was utilised for putting up a good school building. The indigenous methods in Mysore of keeping delicate buffalo calves on wooden platforms which is similar to the Danish method of keeping calves in small wooden pens have probably saved lakhs if not crores of rupees—and is a method that could be easily extended to other parts of the country. Death of buffalo calves is due mostly to infection by worms which could be effectively prevented by this method.

Soil analysis, addition of 'Trace Elements' which control plant growth, and the gradual replacement of soil by both organic and inorganic manures would have to be taken up on an extensive and

systematic manner. The soil is being depleted for decades, and cow-dung which could be utilised in replenishment of the fertility of the soil is still being utilised as fuel. The alimentary canal of the bovines is the only laboratory of nature wherein cellulose is digested and returned to the soil in a form which could be used by plants for food.

Economy in the utilisation of water in irrigation would, I am sure, be one of the subjects that would be gone into while discussing increased productivity. Text books in Engineering and Agriculture have indicated the requirements as so many inches, if I remember correctly is 60 inches, to be supplied at various stages—preparation and puddling—transplantation, development of the flowing spathe and ripening of the crop. There is, however, considerable scope for economy as there are other factors like precipitation (rainfall) drainage, nature of the soil, duration of the crop, season, humidity transpiration governing the requirement of water by crops. Some at least of these factors would be helpful in reducing the requirement. While credit should be given to the ryot for his great local experience the usual tendency of the ryot especially the one in the higher reaches of the canals is to monopolise the supply must not be forgotten. The individual would naturally aim at maximising production in his field rather than to allow the water to be utilised for the benefit of the largest number of ryots in the ayacut and maximising production in that area. The public servant has a very important part to play on these occasions when the interests of the individuals come into conflict with that of the community.

The conservation of moisture in the soil from precipitation should also engage our attention. There are well recognised practices like lightly consolidating the loose ploughed up soil to form a blanket to prevent loss, by evaporation, and also contour bunding. The research work conducted in America which has made it possible to grow good crops in extensive areas in Texas where the conditions are not dissimilar to that of our drought affected areas also deserve study.

Utilisation of underground water at various depths is also important subject. Filter points in Delta regions of Andhra have enabled ryots to raise second crop in extensive areas which are not supplied with canal water during the second crops season. Artesian belts should be fully exploited. Even some ordinary wells have got remarkable recuperative capacity. Provision of Electricity for lifting water for irrigation will go a long way in increasing the area under irrigation. Schemes for Rural electrification should have a special bearing on this very important aspect. Utilisation of water

from small hill streams or Vagus which would otherwise be lost by evaporation should also engage our attention. Recently in Mahbubnagar (Andhra Pradesh) under the guidance and instructions of Shri Tarlok Singh a scheme for fuller utilisation of local resources was taken up and investigations are being conducted. The possibilities of lift irrigation from wells and hill streams as brought out by the investigations are enormous. The cost of pumping also will be very reasonable.

While we are dealing with the subject of increasing productivity it will not be inappropriate to deal with methods of preventing loss by rats and insects. Cleaning the grain especially pulses, breaking them into dhal, coating the surface with a thin film of oil to make it slippery and thus preventing insects from making holes for depositing the eggs inside are well known methods which, however, unfortunately are not practised.

The human system is said to be a very efficient low combustion engine. In the recent article on the Sun which appeared in the Readers' Digest—It is mentioned that even the Sun which gets its extraordinary energy from the breaking up of the Hydrogen atom is inferior from the point of efficiency to the human system. It is possible to increase the efficiency of the human system further. Articles of food like pulses may be made much more digestible (percentage of digestibility which of course depends on the person is as low as 50 per cent) by germination which is a well-known practice—Valuable proteins can be extracted from cotton seed, groundnut, etc. It is appropriate that a tribute should be paid to the Scientists of Mysore who have done wonderful work in this direction. The question of feeding poultry humourously referred to by the Chief Secretary of Mysore is a very important subject. Even our cattle are not properly stall fed. Goats especially some breeds like the 'Jamunapuri' if properly stall fed yield good quantities of milk which is even more easily digestible than cow's milk—as the globules of fat are relatively very small.

Agriculture must be made quite attractive as a profession. Even now there are fodder crops like Guinea grass which yield an extraordinary high return. This can be done not only by making available all the inputs like seed, water, manure, but also providing credit and by fixing fair prices.

I am sure we will discuss about the need for the technical personnel to look at the problems from the administrative angle and for Administrators to understand at least the fundamental scientific principles. Delegation in a substantial measure all down the line is needed.

The need for officers getting a first hand knowledge of villages was emphasised both by the Union Minister, and the Chief Minister. The jeep has provided a very effective and convenient means of reaching many villages—though even in olden days—many officers have visited hundreds of villages on horseback.

I would now outline roughly the method we follow in our discussions. As the papers have been circulated well in advance, I am sure, all the participants would have read them. I must compliment the authors for the lucid and interesting way in which they have presented the facts. They are requested to indicate the salient points in their papers. These points will then be discussed and conclusions will be recorded.

APPENDIX III.

PARTICIPANTS

ANDHRA PRADESH

1. Sri K. N. Anantaraman, I.C.S., Chief Secretary to Government of Andhra Pradesh.
2. Sri Ram K. Vepa, I.A.S., Secretary of the Andhra Pradesh Regional Branch of I.I.P.A., and Managing Director, Andhra Pradesh Industrial Development Corporation, Ltd.
3. Dr. T. V. Reddy, Director, Agriculture Department, Government of Andhra Pradesh.
4. Sri P. L. Bhandari, Secretary, Sirpur Paper Mills, Ltd., 'Ali Villa', Somajiguda, Hyderabad.
5. Sri M. Sirajuddin, Na. 1, Masab Tank Road, Hyderabad.

MYSORE STATE

1. Sri K. Balachandran, I.C.S., Chief Secretary to Government of Mysore.
2. Sri G. V. K. Rao, I.A.S., Development Commissioner and Special Secretary to the Government of Mysore.
3. Sri M. Subramanyam, I.A.S., Secretary to Government of Mysore, Commerce and Industries Department.
4. Sri T. Shamanna, I.A.S., Director of Industries and Commerce, Mysore State.
5. Dr. H. R. Arakeri, Director of Agriculture, Mysore State.

6. Sri R. S. Aradhya, President, All-Mysore Small Scale Industries Association, Bangalore.
 7. Sri M. Krishnamurthy, General Secretary, All-Mysore Small Scale Industries Association, Bangalore.
 8. Sri M. K. Ramachandra, Partner, M/s. Krishna Industries, Ltd., Old Tharagupet, Bangalore-2.
 9. Sri R. Dwarakinath, Director of Extension, University of Agricultural Sciences, Bangalore.
 10. Sri B. Rudramoorthy, Principal, Orientation and Study Centre, Mysore.
 11. Sri C. A. Jamkhandimath, I.A.S., Registrar of Co-operative Societies, Mysore State.
 12. Prof. R. Natarajan, Chairman, Management and Consultants (P) Ltd., Bangalore.
 13. Sri Santadoss, Deputy Chief Officer, Agricultural Credit Department, Reserve Bank of India, Bangalore.
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